Vol. 1005 Number 3

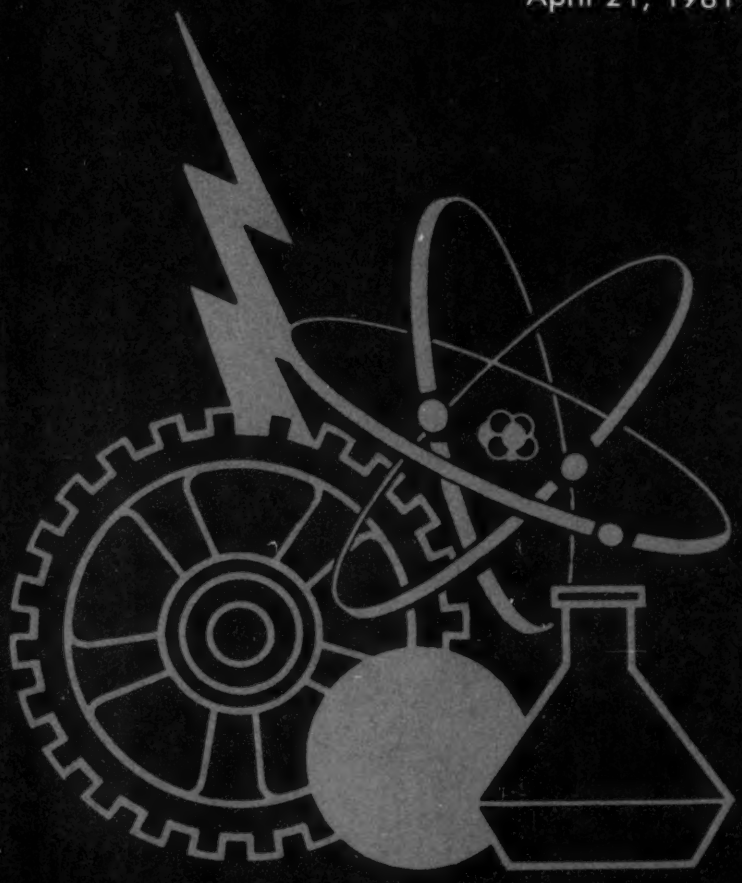
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 21, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

April 21, 1981 Volume 1005 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the list of PCT member countries and the most recent PCT rule changes see the notice appearing at 1001 O.G. 14 in the OFFICIAL GAZETTE of December 9, 1980.

Note that the international fees have been increased as of January 1, 1981. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International fees	
Basic fee (first 30 pages)	265.00
Basic supplemental fee (for each sheet over 30)	5.00
Designation fee	64.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

January 13, 1981.

Decrease in Patent Cooperation Treaty (PCT) International Fees. Effective May 19, 1981.

Under PCT Rule 15.2(d), whenever the exchange rate between the Swiss currency and the United States currency becomes different by at least 10% from the exchange rate previously applied new amounts for the international fees in U.S. dollars are established. Since the exchange rates changed favorable to the U.S. dollar, new amounts in U.S. dollars become effective on May 19, 1981.

There is no change in the transmittal fee, which remains at $35.00; or the search fee, which remains at $300.00.

The current $265.00 International Basic Fee for an application 30 sheets or less is reduced to $215.00, effective May 19, 1981.

The Basic Fee Supplement for each sheet over 30 is reduced from $5.00 to $4.00, effective May 19, 1981.

The Designation Fee for each State or group of States for which the same regional patent is sought is reduced from $64.00 to $50.00 effective, May 19, 1981.

Accordingly, the PCT fees in effect after May 19, 1981 are as follows:

Transmittal Fee	$ 35.00
Search Fee	$300.00
International Basic Fee (For the first 30 sheets of an international application)	$215.00
Basic Supplemental Fee (for each sheet over 30)	$ 4.00
International Designation Fee (For each State for which a national patent is sought, or group of States for which the same regional patent is sought)	$ 50.00

For further information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Offical Gazette of Jan. 6, 1981.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,459,070, Re. S.N. 185,823, Filed Sept. 10, 1980, Cl. 74/705, WHEEL DRIVE MECHANISM, John W. Holdeman, Owner of Record: *Borg-Warner Corp., Chicago, Ill.* Attorney or Agent: Robert L. Z352

3,921,356, Re. S.N. 210,535, Filed Nov. 25, 1980, Cl. 52/299, SYSTEM AND APPARATUS FOR INTERCONNECTING STRUCTURAL MEMBERS, AND METHOD OF UTILIZING SAME, Robert S. Hughes, Owner of Record: *Oakwood Manufacturing, Inc., Oxford, Mich.,* Attorney or Agent: Irving M. Weiner, Ex. Gp.: 354

4,112,532, Re. S.N. 179,272, Filed Aug. 18, 1980, Cl. 8/151, METHOD OF PADDING AND EXTRACTING A CONTINUOUSLY ADVANCING CIRCULAR KNIT FABRIC TUBE, Frank Catallo, Owner of Record: *Inventor,* Attorney or Agent: Willis H. Taylor, Jr., et al., Ex. Gp.: 242

4,126,673, Re. S.N. 208,722, Filed Nov. 20, 1980, Cl. 241/14, METHOD FOR PROCESSING DROSS, Paul J. Cromwell, Owner of Record: *Cromwell Metals, Inc., Ashtabula, Ohio,* Attorney or Agent: Gerald D. Hosier, Ex. Gp.: 322

4,131,767, Re. S.N. 220,191, Filed Dec. 23, 1980, Cl. 179/170.2, ECHO CANCELLATION IN TWO-WIRE, TWO-WAY DATA TRANSMISSION SYSTEMS, Stephen Brent Weinstein, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 235

4,141,500, Re. S.N. 204,751, Filed Nov. 6, 1980, Cl. 238/304, RAILWAY TIE PLATE AND A METHOD OF MAKING A RAILWAY TIE PLATE, Nelson A. Gragnani, Owner of Record: *Pandrol Ltd., London, England,* Attorney or Agent: Michael N. Meller, et al., Ex. Gp.: 316

4,166,856, Re. S.N. 197,725, Filed Oct. 16, 1980, Cl. 424/270, THIAZOLE AND ISOTHIAZOLE DERIVATIVES AS BLOCKERS OF HISTAMINE H2 - RECEPTORS, Graham J. Durant, et al., Owner of Record: *Smith Kline & French Laboratories Ltd., Welwyn Garden City, England,* Attorney or Agent: William H. Edgerton, et al., Ex. Gp.: 125

PATENT NOTICES

Certificates of Correction for the Week of Apr. 21, 1981

Plt. 4,621	4,220,822	4,235,654	4,242,257
Re. 30,347	4,220,937	4,235,856	4,242,740
Re. 30,477	4,222,659	4,235,973	4,242,805
3,862,018	4,222,769	4,235,983	4,242,893
3,891,816	4,223,981	4,236,434	4,242,984
3,910,944	4,224,631	4,236,522	4,243,510
3,927,075	4,224,803	4,236,764	4,243,572
4,011,891	4,225,686	4,236,826	4,244,202
4,020,173	4,225,723	4,237,146	4,244,365
4,055,955	4,227,106	4,237,157	4,244,719
4,092,992	4,227,163	4,237,294	4,245,145
4,102,185	4,227,765	4,237,362	4,245,323
4,130,322	4,227,886	4,237,382	4,245,453
4,136,126	4,229,274	4,237,423	4,245,492
4,139,487	4,229,349	4,237,568	4,245,541
4,152,488	4,229,355	4,237,879	4,245,708
4,167,449	4,229,461	4,237,880	4,246,163
4,173,475	4,229,577	4,237,994	4,246,249
4,191,565	4,230,559	4,238,027	4,246,766
4,191,824	4,230,647	4,238,351	4,247,356
4,192,860	4,230,656	4,238,374	4,247,489
4,193,781	4,230,980	4,238,462	4,247,524
4,198,667	4,231,268	4,238,496	4,247,760
4,199,400	4,231,882	4,238,631	4,247,936
4,202,317	4,231,904	4,239,311	4,247,946
4,203,899	4,232,021	4,239,506	4,248,024
4,205,196	4,232,269	4,239,571	4,248,270
4,206,304	4,232,620	4,239,661	4,248,580
4,207,344	4,232,696	4,239,842	4,248,692
4,208,427	4,232,839	4,239,909	4,248,785
4,215,117	4,233,091	4,239,977	4,248,896
4,215,310	4,233,154	4,240,102	4,248,916
4,215,312	4,233,526	4,240,895	4,249,189
4,218,337	4,233,978	4,240,939	4,249,348
4,218,623	4,234,087	4,241,129	4,249,460
4,218,706	4,234,246	4,241,657	4,250,034
4,219,329	4,234,492	4,241,857	4,250,226
4,220,417	4,234,681	4,241,860	4,250,435
4,220,559	4,234,932	4,241,978	4,250,510
4,220,796	4,235,229	4,242,066	4,251,318
4,220,797			

National Technical Information Services

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG
Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6-158,008. The Log-Log Scale Lens. Filed June 9, 1980.

Patent application 6-162,333. High Power Laser Irradiance Display Material. Filed June 23, 1980.

Patent application 6-165,924. Uranium-Excimer Nuclear Reactor Laser. Filed July 3, 1980.

Patent application 6-166,720. Crane Assembly. Filed July 7, 1980.

Patent application 6-166,872. Pulsed Laser Beam Intensity Monitor. Filed July 7, 1980.

Patent application 6-170,330. High Energy Laser Target Board. Filed July 21, 1980.

Patent application 6-170,387. Variable Pressure Fuel Injection System. Filed July 21, 1980.

Patent application 6-171,872. Energy Management Damper. Filed July 24, 1980.

Patent application 6-172,803. Improved Hollow Beam Electron Source. Filed July 28, 1980.

Patent application 6-177,032. Means and Method for Testing Laser Range Finders. Filed Aug. 11, 1980.

Patent application 6-179,309. High Power Attenuator and Termination. Filed Aug. 18, 1980.

Patent application 6-181,038. Instant Start Thyratronr. Filed Aug. 25, 1980.

Patent application 6-182,917. PUV/NUV Processing Circuit. Filed Sept. 2, 1980.

Patent application 6-183,608. Focus Meter. Filed Sept. 2, 1980.

Patent application 6-183,656. Method of Coating Silicon Nitride Bodies. Filed Sept. 2, 1980.

Patent application 6-184,867. Temperature Responsive Control Circuit. Filed Sept. 8, 1980.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6-180,542. Improving the Removal of Lint from Cottonseed. Filed Aug. 25, 1980.

Patent application 6-180,546. Solubilization of Lignocellulosic Materials. Filed Aug. 25, 1980.

Patent 4,225,512. Ternary Salts of Tris(Aminomethyl) Phosphines and Their Oxides Prepared by the Hydrolysis of 1,3,5-Triazo-7-Phosphaadamantane and Its Oxide. Filed July 26, 1979. Patented Sept. 30, 1980. Not available NTIS.

Patent 4,231,747. Shrinkproofing Wool with Copper Salts of Carboxylic Acids. Filed July 16, 1979. Patented Nov. 4, 1980. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE

National Tech. Information Service
Office of Government Inventions and Patents
Springfield, Va. 22161

Patent 4,213,107. Ultra-Black Coating Due to Surface Morphology. Filed Apr. 20, 1979. Patented Nov. 11, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-080,726. Conversion of Alkali Metal Sulfate to the Carbonate. Filed Oct. 1, 1979.

Patent 4,211,889. Thermoelectric Module. Filed Sept. 16, 1968. Patented July 8, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent application 6-025,157. Improved Multi-Step Process for the Production of Methanesulfon-m-anisidide, 4-(9-acridinylamino)-. Filed Mar. 29, 1979.

Patent application 6-110,045. Method for Treating Intraoocular Malignancies. Filed Jan. 7, 1980.

Patent application 6-110,293. Ethiodized Oil Emulsion for Intravenous Hepatography. Filed Jan. 8, 1980.

Patent application 6-115,411. Facile Synthesis of Codeine Precursors from Thebaine. Filed Jan. 25, 1980.

Patent application 6-115,900. Seven-Membered Ring Compounds as Inhibitors of Cytidine Deaminase. Filed Dec. 19, 1979.

Patent application 6-133,788. Improved Synthesis of 2,4-Diamino-6 Hydroxymethylpteridine. Filed Mar. 25, 1980.

Patent application 6-143,129. Separation of Triphenylphosphine Oxide from Methotrexate Ester and Purification of Said Ester. Filed Apr. 23, 1980.

Patent application 6-150,320. Inactivation on Non-A, Non-B Hepatitis Agent. Filed May 16, 1980.

Patent application 6-170,570. Water Soluble Forms of Retinoids. Filed July 21, 1980.

Patent application 6-172,086. 7 alpha-Methylnorethindrore Enanthate and Its Use in Long Term Suppression of Fertility in Female Mammals. Filed July 24, 1980.

Patent application 6-175,594. Improved Method for the Use of Orally Administered 13-Cis-Retinoic Acid in the Treatment of Acne. Filed Aug. 5, 1980.

Patent application 6-181,465. Nondanaturing Zwitterionic Detergents for Membrane Biochemistry. Filed Aug. 26, 1980.

Patent application 6-190,064. N-Acetyl-Cysteine Protects Against Cardiac Damage from Subsequently-Administered Cardio-Toxic Anthracycline in Cancer Therapy. Filed Sept. 23, 1980.

Patent 4,228,950. Horizontal Flow-Through Coil Planet Centrifuge. Filed Dec. 4, 1978. Patented Oct. 21, 1980. Not available NTIS.

Patent 4,232,154. Carbocyclic Analogs of Cytosine Nucleosides Exhibiting Antiviral and Antineoplastic-activity. Filed July 17, 1979. Patented Nov. 4, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-155,281. Manchester Code Decoding Apparatus. Filed July 2, 1980.

Patent application 6-157,910. An Improved Performance Rotating Heat Pipe. Filed June 9, 1980.

Patent application 6-171,860. Coaxial Termination for Cable In-Line Electronic Applications. Filed July 24, 1980.

Patent application 6-177,707. Interleaved Sweep Radar Display for Improved Target Detection. Filed Aug. 13, 1980.

Patent application 6-181,292. Method of Making GeTe Infrared Detector. Filed Aug. 25, 1980.

Patent application 6-181,926. Fragment-Tolerant Transmission Line. Filed Aug. 27, 1980.

Patent application 6-188,419. Solid State Power Transformer. Filed Sept. 16, 1980.

Patent application 6-189,245. Survey Spar System for Precision Offshore Seafloor Surveys. Filed Sept. 22, 1980.

Patent application 6-189,497. Method of Providing Phase Biasing in a Continuous Single-Mode Fiber Ring Interferometer. Filed Sept. 22, 1980.

Patent application 6-190,298. Optical Fiber Waveguide for Measuring Magnetic Fields. Filed Sept. 24, 1980.

Patent application 6-191,563. Fused Single-Mode Fiber Bidirectional Coupler. Filed Sept. 29, 1980.

Patent application 6-192,962. Dispersion Compensated Acoustic Surface Waveguides Using Diffused Substrates. Filed Oct. 2, 1980.

Patent application 6-193,864. Flexible Semiconductive Polymers. Filed Oct. 3, 1980.

Patent application 6-194,166. A Two-Stage Spatial Frequency Filter. Filed Oct. 6, 1980.

Patent 4,223,241. Electrostatic Charge Generator. Filed Aug. 28, 1978. Patented Sept. 16, 1980. Not available NTIS.

Patent 4,223,661. Portable Diver Heat Generating System. Filed Aug. 13, 1979. Patented Sept. 23, 1980. Not available NTIS.

Patent 4,224,520. Room Temperature Two Color Infrared Detector. Filed July 13, 1979. Patented Sept. 23, 1980. Not available NTIS.

Patent 4,224,626. Ellipticized Lens Providing Balanced Astignatism. Filed Oct. 10, 1978. Patented Sept. 23, 1980. Not available NTIS.

Patent 4,227,948. Growth Technique for Preparing Graded Gap Semiconductors and Devices. Filed Dec. 27, 1977. Patented Oct. 14, 1980. Not available NTIS.

TENNESSEE VALLEY AUTHORITY

Division of Law
Muscle Shoals, Ala. 35660

Patent 4,213,924. Granulation and Coating by Improved Method of Heat Removal. Filed June 19, 1978. Patented July 22, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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	St. Louis Public Library	(314) 241-2288 Ext. 214
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New Jersey	Newark Public Library	(201) 733-7740
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF Apr. 21, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-29-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-07-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	10-22-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-14-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-11-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-08-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-05-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	7-09-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	3-09-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-29-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-01-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-18-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	7-27-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during Feb. 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,122,749 to 3,127,613, inclusive

Plant Patents ..... Numbers 2,368 to 2,388, inclusive

REISSUES

APRIL 21, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,581
SUPPLEMENTARY SUPPORT FOR VEHICLES

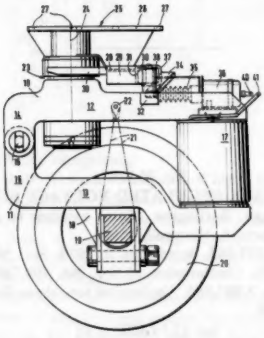
Herbert Schneider, Haimhausen, Fed. Rep. of Germany, assignor to Süd-Chemie AG, Munich, Fed. Rep. of Germany

Original No. 4,161,325, dated Jul. 17, 1979, Ser. No. 861,910, Dec. 19, 1977. Application for reissue Nov. 13, 1979, Ser. No. 93,862

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713331

Int. Cl.[3] **B60G** *17/00;* **B60B** *11/00*

U.S. Cl. 280—81 R **6 Claims**



1. A removable mobile frame for reduction of axle loads of a heavy vehicle comprising first and second horizontal lever arms pivotally interconnected at one end, biasing means interposed between free ends of said lever arms, a supporting member connected to said first lever arm and adapted to be attached to said vehicle, the connection between said supporting member and said first lever arm including a shaft defining a vertical rotatable pivot axis between said first lever arm and said supporting member, means normally maintaining said supporting member and said first lever arm in a predetermined position and accommodating rotation from said predetermined position, said last means including a cam track on said supporting member and a cam on said first lever arm biased into engagement with said cam track with said cam track defining said predetermined position, and at least one axle and one rotor wheel on said axle connected to said second lever arm.

Re. 30,582
PROCESS FOR PREPARING LATEX

John Ugelstad, Trondheim, Norway, assignor to Sintef, Trondheim, Norway

Original No. 4,113,687, dated Sep. 12, 1978, Ser. No. 825,136, Aug. 16, 1977. Application for reissue Jun. 29, 1979, Ser. No. 53,202

Claims priority, application Norway, Feb. 10, 1977, 772805

Int. Cl.[3] **C08F** *2/24*

U.S. Cl. 260—29.6 XA **21 Claims**

1. A process for preparing a latex which comprises homogenizing [under pressure] an aqueous mixture containing an emulsifier and a water-insoluble solvent for the vinylic monomer(s) to be polymerized, said solvent having a water-solubility at 25° C. of $<10^{-3}$ g/l H_2O to form a stable preemulsion of said solvent in water, [whereby the increased pressure of homogenization resulting in smaller but more drops in said preemulsion and consequently in the final latex,] and then adding to said preemulsion the monomer(s) to be polymerized and optionally additional water, together with or followed by a polymerization initiator selected from water-soluble polymerization initiators and oil-soluble polymerization initiators having sufficient water solubility to diffuse through the aqueous phase into the drops formed by diffusion of the monomer(s) into said solvent, the weight ratio of emulsifier and solvent to total water being 1:500–1:50 and *at least* 1:1000 [–3:100], respectively, and the weight ratio of emulsifier and solvent to monomer(s) being 1:500–1:30 and *at least* 1:1000 [–1:20], respectively.

Re. 30,583
VINYL ESTER RESIN COMPOSITIONS CONTAINING DICYCLOPENTADIENE ALKENOATE

Donald L. Nelson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Original No. 4,117,030, dated Sep. 26, 1978, Ser. No. 814,358, Jul. 11, 1977. Application for reissue Jan. 24, 1979, Ser. No. 6,311

Int. Cl.[3] **C08L** *63/00*

U.S. Cl. 525—531 **9 Claims**

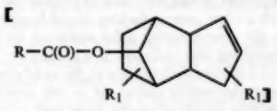
1. A thermosetting resin composition which comprises

(A) about 80 to about 30% by weight of a vinyl ester resin having terminal unsaturation,

(B) about 20 to about 70% by weight of an unsaturated monomer mixture of a vinyl aromatic monomer and dicyclopentadiene alkenoate concentrate [comprising

(a) about 50–100% by weight of compounds of the formula]

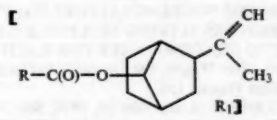
[



]

[(b) about 0–30% of compounds of the formula]

[



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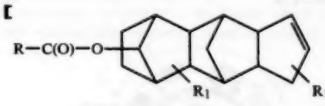
[(c) about 0–2% of compounds of the formula]

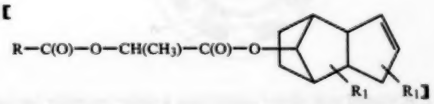
[



]

[and (d) about 0–2% of compounds of the formula]

[



]

[where R is a alkenyl group having 2–4 carbon atoms and R_1 is hydrogen or a methyl group] wherein the range of dicyclo-

pentadiene alkenoate concentrate in said mixture ranges from about 5 to about 90 weight percent.

Re. 30,584

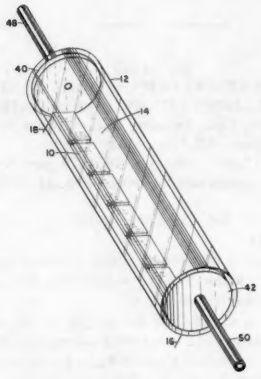
OPTICAL CONCENTRATOR AND COOLING SYSTEM FOR PHOTOVOLTAIC CELLS

Charles R. Russell, Santa Barbara, Calif., assignor to Owens-Illinois, Toledo, Ohio

Original No. 4,052,228, dated Oct. 4, 1977, Ser. No. 704,328, Jul. 12, 1976. Application for reissue Oct. 1, 1979, Ser. No. 80,252

Int. Cl.[3] **H01L** *31/04*

U.S. Cl. 136—246 **22 Claims**



6. A method for converting solar radiation to electrical energy which comprises the steps of (1) passing solar radiation through an elongated transparent curved wall tube of glass or plastic substantially filled with a clear nonconducting liquid having a refractive index suitable for concentrating solar radiation on photovoltaic cells; (2) concentrating said radiation on a plurality of photovoltaic cells mounted in a linear configuration in the axial direction inside of said tube and electrically connected to one another; and (3) thereafter recovering electrical energy from said voltaic cells.

Re. 30,585

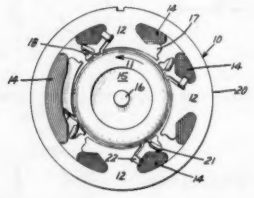
CONCENTRATED WINDING SALIENT-POLE SHADED POLE MOTORS HAVING MULTIPLE SHORT CIRCUITED SHADING COILS FOR EACH POLE

Joe T. Donahoo, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Original No. 3,959,678, dated May 25, 1976, Ser. No. 293,802, Oct. 2, 1972. Application for reissue May 17, 1978, Ser. No. 906,438

Int. Cl.[3] **H02K** *17/10*

U.S. Cl. 310—172 **18 Claims**



1. A shaded pole motor comprising a stator assembly having at least one excitable winding, a rotor assembly, and means for supporting the rotor assembly in spaced apart air gap defining relation with the stator assembly and for permitting rotation of the rotor assembly relative to the stator assembly during excitation of said winding; said stator assembly including a magnetizeable core having circumferentially spaced apart pole pieces; at least one of the pole pieces having a leading pole tip configured to establish a relatively high magnetic reluctance therealong, as compared to another region of such pole piece; said at least one of the pole pieces also having at least two short circuited shading coils disposed along the trailing pole tip thereof; and said pole pieces being spaced apart so that the leading pole tip of each pole piece is spaced from the trailing pole tip of the pole piece adjacent thereto; said rotor assembly including a short circuited squirrel cage winding, and the locked rotor torque to maximum torque ratio for the motor being greater than about thirty-three one hundredths.

Re. 30,586

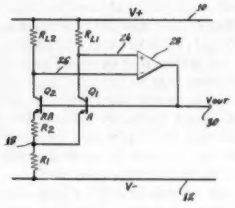
SOLID-STATE REGULATED VOLTAGE SUPPLY

Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Original No. 3,887,863, dated Jun. 3, 1975, Ser. No. 419,616, Nov. 28, 1973. Continuation of Ser. No. 799,760, May 23, 1977, now Re. 3,887,863. Application for reissue Feb. 2, 1979, Ser. No. 8,775

Int. Cl.[2] **G05F** *1/48*

U.S. Cl. 323—314 **21 Claims**



21. A solid-state band-gap reference device comprising:

first and second transistors having their bases coupled together;

means for supplying commonly controllable and tracking base voltages to said two transistors;

means coupled to said transistors for developing therethrough currents of magnitude providing a non-unity ratio of current densities in said transistors;

means for producing a first voltage responsive to the difference between the base-to-emitter voltages of said two transistors;

means to connect said first voltage to the emitter of one of said transistors, said first voltage and the base-to-emitter voltage of said one transistor defining a composite voltage compensated for temperature;

means to sense the changes in relative magnitudes of current through said two transistors responsive to changes in said commonly controllable and tracking base voltages of said two transistors; and

an amplifier coupled to said sensing means to produce an output the magnitude of which reflects a comparison of said changes in current through said two transistors produced by changes in said commonly controllable base voltages.

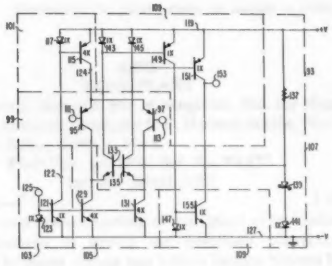
Re. 30,587
DIFFERENTIAL AMPLIFIER CIRCUIT

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Original No. 3,979,689, dated Sep. 7, 1976, Ser. No. 545,091, Jan. 29, 1975. Application for reissue Oct. 25, 1978, Ser. No. 954,614

Int. Cl.[2] H03F *3/45*

U.S. Cl. 330—257 **17 Claims**



1. An amplifier comprising:

a pair of input terminals receptive of input signals;

first and second like conductivity transistors each having collector, emitter and base electrodes, said emitter electrodes being connected to one another, and each base electrode being connected to a different input terminal;

first and second voltage rails;

first current supply means connected between the emitter electrodes of said first and second transistors and said first voltage rail, for providing a current flow of given value between said emitter electrodes and said first rail;

second and third current supply means connected between the collector electrodes of said first and second transistors and said second voltage rail, respectively, which together provide a flow of current substantially greater than that of said first current supply means;

fourth and fifth current supply means, the fourth connected between said first rail and said second supply means, the fifth connected between said first rail and said third supply means, said fourth current supply means and said first transistor supplying a total current equal to that of said second supply means, and said fifth current supply means and second transistor supplying a total current equal to that of said third supply means; and

means for maintaining said collector electrodes at [a reference voltage level of a value between that at said first and second rails] *quiescent potentials of like value departing from the voltage on said second voltage rail in the same direction as the voltage on said first voltage rail and by an amount sufficiently small that the base electrode of either of said first and second transistors can accept input voltages with excursions past the voltage on said second voltage rail in the direction away from the voltage on said first voltage rail without appreciable forward conduction of current between the base electrode of that transistor and its collector electrode.*

Re. 30,588
ELECTRIC TIMEPIECE FOR DISPLAYING THE OPERATING CONDITION THEREOF

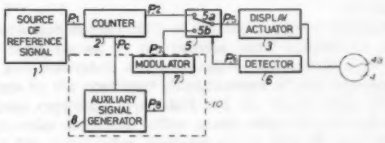
Munetaka Tamaru, Tokyo; Kazunari Kume, Tokorozawa; Hideshi Oono, Sayama; Minoru Watanabe, Tokorozawa; Hideo Sato, Sayama, and Shigeru Morokawa, Higashiyamato, all of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Original No. 3,998,043, dated Dec. 21, 1976, Ser. No. 526,980, Nov. 25, 1974. Application for reissue Dec. 14, 1978, Ser. No. 969,577

Claims priority, application Japan, Dec. 26, 1973, 49-3258; Feb. 26, 1974, 49-22537

Int. Cl.[3] G04B *9/00*

U.S. Cl. 368—66 **9 Claims**



7. An electronic timepiece powered by battery means, comprising:

a source for producing a reference signal having a relatively high frequency;

means for dividing said reference signal to produce a relatively low frequency signal and a time unit signal of a predetermined frequency;

a display device having at least one hand adapted to display time;

a display actuator responsive to said time unit signal to produce a first drive signal of said predetermined frequency to actuate said display device in a customary mode:

a detector for detecting an output voltage of said battery means to generate a detection signal when said output voltage decreases below a predetermined level;

circuit means for generating a modulation signal of a second frequency different from said predetermined frequency in response to said relatively low frequency signal;

signal transfer means responsive to said detection signal for inhibiting said time unit signal being applied to said display actuator and for allowing said modulation signal to pass therethrough to said display actuator;

said display actuator being responsive to said modulation signal to produce a second drive signal of said second frequency whereby said hand is driven in a mode different from said customary mode to indicate an end of life of said battery means;

said display device further comprising a stepping motor which is driven by said display actuator; and

said circuit means comprising a modulator which is responsive to said relatively low frequency signal to produce said modulation signal.

PLANT PATENTS

GRANTED APRIL 21, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,693

ROSE PLANT

Ernest Schwartz, deceased, late of Kingsville, Md. (by Hazel E. Schwartz, executrix), assignor to F. Harmon Saville, Nor'East Miniature Roses, Rowley, Mass.

Filed Nov. 13, 1979, Ser. No. 93,627

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by burnt orange and yellow bicolor blooms borne primarily singly to a stem on a compact, well rounded plant of attractive foliage.

4,694

NEW ROSE PLANT

Samuel D. McGredy, P.O. Box 14-100, Auckland, New Zealand

Filed Jan. 24, 1980, Ser. No. 114,976

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by high centered, flowers of persistent currant red coloring borne primarily singly to a stem and are long lasting on the plant and as cut flowers.

4,695

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Feb. 15, 1980, Ser. No. 121,917

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by a floriferous, vigorous, free branching plant producing heavily petalled flowers of red coloring borne singly to a stem and in small clusters and which retain their attractiveness upon aging as well as in hot weather.

4,696

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 3, 1979, Ser. No. 99,416

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Dragon, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; dark red ray floret color with minimum color oxidation; yellow green (immature) to yellow (mature) disc floret color; diameter across face of capitulum ranging from 90 to 100 mm. at maturity; uniform eight week photoperiodic flowering response to short days; tall plant height when grown as a single stem cut spray; and semi-upright branching pattern.

4,697

CHRYSANTHEMUM PLANT

Phillip A. Soderman, Carpinteria, Calif., assignor to Sandyland Nursery Company, Inc., Carpinteria, Calif.

Filed Dec. 12, 1979, Ser. No. 102,967

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., known by the cultivar name White Gem, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of daisy capitulum type; flat capitulum form; light lavender pink ray floret color (commercially acceptable white); diameter across face of capitulum ranging from 70 to 88 mm. at maturity; uniform seven week flowering response to photoperiodic short day control; tall plant height, and upright branching pattern.

4,698

BLUEGRASS PLANT

Benedict O. Warren, Palos Hills, Ill., assignor to Warren's Turf Nursery, Inc., Palos Hills, Ill.

Filed Aug. 27, 1979, Ser. No. 70,273

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct variety of Bluegrass Plant herein described and illustrated and identified by the characteristics enumerated above.

PATENTS

GRANTED APR. 21, 1981

ERRATA

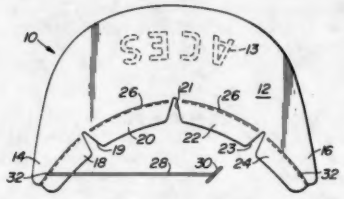
For CLASS	See PATENT NO.
434–170	4,262,431
434–161	4,262,432
411–015	4,262,577
493–188	4,262,581
493–025	4,262,582
493–344	4,262,583
440–001	4,262,622
037–041	4,262,753
369–041	4,262,912
564–422	4,263,225
564–459	4,263,226
564–256	4,263,227
564–491	4,263,228
414–262	4,263,304
525–106	4,263,401
369–139	4,263,483
260–045.8 NZ	4,263,505
318–341	4,263,557

PATENTS

GRANTED APRIL 21, 1981

GENERAL AND MECHANICAL

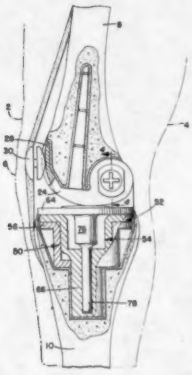
4,262,367
SUN VISOR
Lenny Herrin, Elkins Park, Pa., assignor to Regent Paper Box Co., Inc., Philadelphia, Pa.
Filed Jan. 2, 1979, Ser. No. 456
Int. Cl.[3] A61F 9/04
U.S. Cl. 2—12 **3 Claims**



1. A sun visor comprising a plastic visor portion which is generally U-shaped and having a curved inner periphery extending to leg portions, elastomeric string means extending between said leg portions, and string means being adapted to extend around the rear portion of a wearer's head, an even number of discrete flanges at the inner periphery of the visor portion, a discrete hinge for each flange, the ends of adjacent hinges being spaced from one another, each hinge being a discrete living hinge, each flange being spaced from an adjacent flange by a gap, one of said gaps being adjacent the center of the bight portion of the inner periphery of said visor portion, said gaps being V-shaped with curved apexes and extending between the ends of two adjacent hinges, each gap being deeper than the width of said flanges so that said gaps extend beyond the ends of adjacent hinges and into the visor portion, said visor portion having indicia on a surface thereof, and each hinge being integral on one piece with said visor portion and one of said flanges.

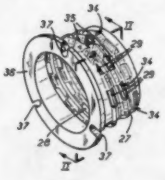
4,262,368
ROTATING AND HINGED KNEE PROSTHESIS
James A. Lacey, Winter Park, Fla., assignor to Wright Manufacturing Company, Arlington, Tenn.
Filed Sep. 24, 1979, Ser. No. 78,451
Int. Cl.[3] A61F 1/03
U.S. Cl. 3—1.911 **2 Claims**

1. A total knee joint prosthesis comprising:
(a) a femoral component having the following elements:
i. a proximal stem for intramedullary implantation in the femur,
ii. a base member integrally connected to the distal end of the stem and having condylar surfaces of increasing radius from ananterior to posterior terminating in an anterior proximally directed patella engaging surface, and
iii. laterally spaced axially aligned hinge pin receiving members on the base member positioned posteriorly of the stem,
(b) a tibial component having the following elements:
i. a distally positioned metal base member comprising a proximally located annular cup-shaped part having an annular flange, with proximally-distally extending opening therethrough,
ii. an intermediately positioned bushing member formed of a synthetic plastic material having a proximally located annular flange positioned within the cup-shaped part of the tibial base member and surrounding a cup-shaped recess, and a depending tubular part extending through the opening in the tibial base member and connected thereto by means preventing relative rotation between the two members and being adapted for intramedullary implantation in the tibia,
iii. a proximally positioned circular metal plate member having a proximal flat surface positioned to be engaged by the condylar surfaces of the femoral component, and a pin extending distally therefrom having a proximal part constructed to be received within the cup-shaped recess in the bushing member and a cylindrical pin extending distally therefrom and constructed to be snugly received within the bushing member,



iv. a hinge pin receiving member integrally formed on the posterior proximal surface of the plate and extending proximally therefrom and adapted to be positioned between the hinge pin receiving members of the femoral component, and
(c) a hinge pin extending through the interrelated hinge pin receiving members to provide a pivotal connection between the femoral and tibial components posterior to the stem.

4,262,369
ARTIFICIAL JOINTS, IN PARTICULAR COXO-FEMORAL JOINTS
Christiane Roux, Noisy sur Ecole, 77123 Le Vaudoue, France
Filed Jun. 19, 1979, Ser. No. 49,905
Claims priority, application France, Jun. 21, 1978, 78 18619
Int. Cl.[3] A61F 1/03
U.S. Cl. 3—1.912 **16 Claims**



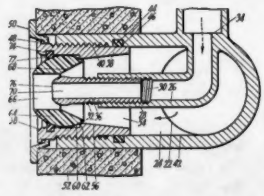
1. An articular prosthesis for an artificial joint, comprising two separate parts including an inner cupule and an outer ring, said inner cupule having a part spherical cavity adapted to receive a corresponding part spherical head, said inner cupule being made of a hard and rigid material of low tensile strength

and shock resistance, said outer ring being made of metal, said outer ring being shrunk fit on the sidewall of said inner cupule.

4,262,370
SUTURELESS INTRAOCULAR LENS
Jack Hartstein, Creve Coeur, Mo., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Aug. 4, 1976, Ser. No. 711,540
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **3 Claims**

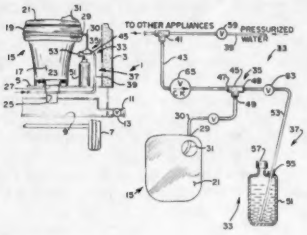
1. An intraocular lens for implantation in the eye comprising:
(a) a central lens portion,
(b) inferior anchor means fastened to the said lens portion and adapted to position the lens with respect to the inferior portion or the iris while allowing the iris to move with respect to the said lens, and
(c) superior anterior and posterior anchor means integral with the lens body adapted to engage the superior portion of the iris to fix the lens in a position relative to the said superior portion of the iris while allowing the pupil to expand and contract without the lens moving relative to said iris, said superior anchor means being adapted to be fastened to the iris without the application of sutures or other outside fastening means, said anterior anchor comprising diverging tabs and said posterior anchor comprises means anchored in each tab and extending rearwardly thereof with foot portions at substantially right angles thereto and defining with the tabs a space adapted to retain the iris, the posterior anchor means being adapted to be positioned in the iris behind the sphinctor muscle to allow contraction and dilation of the pupil without affecting movement of the lens.

4,262,371
AIR-WATER OUTLET FITTING
Desmond J. Berry, and Larry Blankfield, both of 14 Century Dr., Braeside, Victoria, 3195, Australia
Filed Jan. 31, 1979, Ser. No. 8,056
Claims priority, application Australia, Nov. 2, 1978, PD6617
Int. Cl.[3] B05B *15/08;* A61H *9/00;* E04H *3/16*
U.S. Cl. 4—191 **8 Claims**



1. An outlet having a body with an inlet end having an inlet for water and an inlet for air, an outlet end having an outlet for water and an outlet for air, and direction control device at said outlet end; said outlet for water and said outlet for air being formed at said direction control device and being arranged to form a venturi within said direction control device; said direction control device being formed as an eye ball having a tapered passage therethrough, said tapered passage being said outlet for water; said outlet for air being formed as an air tube, the outlet ends of said water and air outlets being located in said tapered passage; said outlet end of said air tube having formed thereon a bulbous head to provide for an annular water flow pattern and to assist in the formation of said venturi; flange means having a bore for mounting said eye ball therein, said flange means having a skirt so as to mount said skirt in said body; and an O-ring in said body so as to provide a water-tight seal between said skirt and said body.

4,262,372
DISINFECTION SYSTEM FOR A PRESSURIZED FLUSH TOILET IN A RECREATIONAL VEHICLE OR THE LIKE
Donald F. Ryder, R.R. 1, Box 212B, Barnhart, Mo. 63012
Filed Jun. 5, 1979, Ser. No. 45,838
Int. Cl.[3] E03D *9/02*
U.S. Cl. 4—222 **10 Claims**



1. In a recreational vehicle or the like having a pressurized water line, a toilet, and a holding tank connected to the toilet for receiving and holding waste from the toilet, said pressurized water line being connected to said toilet, the latter including selectively operable means for flushing the toilet and for permitting waste from the toilet to enter said holding tank, said flushing means including a valve operable so as to permit water from the pressurized water line to enter the toilet, wherein the improvement comprises: means installed in said pressurized water line upstream from said valve for adding a liquid additive solution, such as a deodorant or the like, to the water entering the toilet each time the toilet is flushed, said additive means comprising a closed additive supply tank, and additive line sealably connected to said pressurized water line and to said additive tank so that with said additive tank filled with an additive solution and so that flushing said toilet causes water to flow through said pressurized water lines, said flowing water drawing a quantity of the additive solution from said additive tank and injecting it into the stream of water via said additive line and then further causing water to enter said additive tank via said additive line so that said additive solution is repeatedly injected into said supply line so long as water flows therethrough.

4,262,373
SWIMMING POOL COVER ASSEMBLY
Robert R. Chambers, Studio City, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Apr. 30, 1979, Ser. No. 34,467
Int. Cl.[3] E04H *3/19;* A47H *5/04*
U.S. Cl. 4—502 **4 Claims**

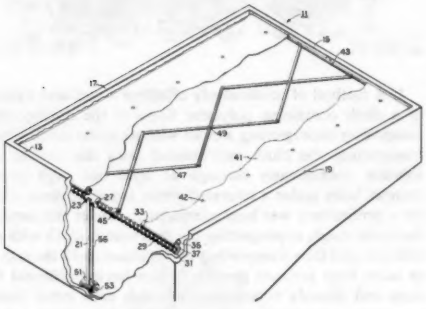
1. A pool cover assembly, comprising:
accumulation means for accumulating a flexible sheet of

material; said accumulation means being located at one end of the pool and consisting essentially of a roll member;

a rotation means for rotating said roll member for causing said sheet to roll onto said roll member for accumulation and to roll off said roll member for extension; said rotation means being connected with said roll member;

a flexible sheet of material of dimensions sufficient to cover a substantial part of the pool, having an inner end secured to the roll member of the accumulation means;

extension means for moving the outer end of the sheet toward the opposite end of the pool from the accumulation means; said accumulation means being adapted to allow movement of the outer end toward said opposite end of said pool without tangling of said sheet; and



submersion means for submerging said accumulation means into the pool adjacent said one end of said pool when the sheet is accumulated for storage, and for positioning the accumulation means at the surface when the sheet is to be extended; the submersion means comprising:

a slide track mounted to the wall of the pool; the slide track extending downwardly adjacent the wall for a selected distance; the roll member being carried by the slide track; and

means for drawing the roll member down the slide track after the sheet is rolled up, and for releasing the roll member when the sheet is to be unwound, the roll member being constructed to be sufficiently buoyant to rise to the surface when released.

4,262,374

BUBBLE WASH UNIT

Toshio Mikiya; Tadahisa Mogaki, both of Tokyo, and Nobuyuki Nozawa, Musashino, all of Japan, assignors to Nikki Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,487

Claims priority, application Japan, Dec. 5, 1978, 53-167886[U]; Jan. 26, 1979, 54-009223[U]

Int. Cl.[3] **A61H** *33/06*

U.S. Cl. 4—537 **45 Claims**

1. An improved bubble wash unit comprising

a wash basin in the form of a bowl, said wash basin having an inner side and an outer side meeting at an upper edge of said wash basin.

a stand assembly detachably coupled to the bottom of said wash basin and internally accommodating a compressor, and

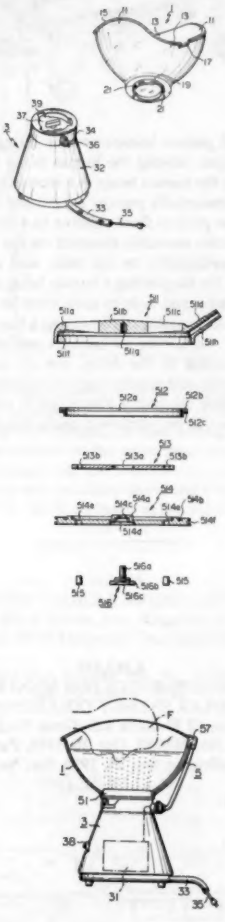
a bubbling assembly which includes a bubble disc placed on the inside bottom of said wash basin and means for connecting said bubble disc pneumatically to said compressor, said connecting means extending from said bubble disc, over said inner side and then over said upper edge and over said outer side of said wash basin so that said connecting means sits astride said upper edge of said wash basin.

45. An improved bubble wash unit comprising

a wash basin in the form of a bowl, said wash basin having an inner side and an outer side meeting at an upper edge of said wash basin,

a stand assembly detachably coupled to the bottom of said wash basin and internally accommodating a compressor, and

a bubbling assembly which includes a bubble disc placed on the inside bottom of said wash basin and means for con-



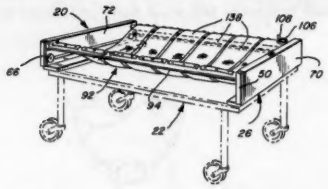
necting said bubble disc pneumatically to said compressor, said connecting means extending from said bubble disc, at said bottom of said basin, upwardly over said inner side of said basin off said inside bottom of said basin, then, generally at said upper edge passing from being over said inner side to being over said outer side of said basin, and said connecting means thereby not passing through said wash basin bowl at a location where liquid in said wash basin might leak through said wash basin bowl at the point of said passing through of said connecting means.

4,262,375

PATIENT TRANSFER APPARATUS

Alfred J. Lilienthal, 398 Burke St., Bourbonnais, Ill. 60914

Filed Oct. 26, 1979, Ser. No. 88,409
Int. Cl.[3] A61G 7/02
U.S. Cl. 5—81 B 5 Claims



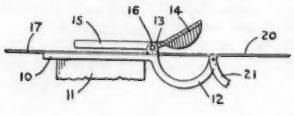
1. A hospital patient transporter for lifting a human being from one location, moving the human being horizontally and then depositing the human being at a second location comprising; a pair of substantially parallel extendable rails, each of said rails having one portion fixed relative to a like portion of the other rail, a carrier movably mounted on the rails for moving substantially horizontally on the rails, said carrier having a patient support for supporting a human being in a substantially horizontal atittude, and a drive connected to the patient support for selectively raising and lowering a human being on the patient support, the carrier including a pair of parallel rollers drivingly connected to the drive, one of said rollers being readily removable, said patient support including a plurality of flexible mats being releasably connected to one of said rollers to allow the mats to be positioned under the human being.

4,262,376

METHOD AND APPARATUS FOR MANUFACTURING A SOLAR ENERGY COLLECTOR

Robert L. Nevins, 12 Franklin Rd., Great Neck, N.Y. 11024

Division of Ser. No. 953,197, Oct. 20, 1978, Pat. No. 4,187,596. This application Sep. 25, 1979, Ser. No. 78,778
Int. Cl.[3] B25F 1/00
U.S. Cl. 7—170 1 Claim



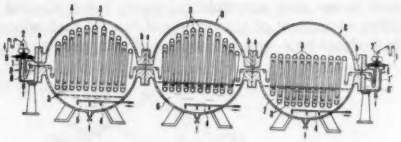
1. Apparatus for manufacturing a tube with an attached solar heat collecting sheet comprising a plate, a first half cylindrical female mold attached to one edge of the plate, a second half cylindrical female mold pivoted to the first female mold at an edge that is spaced from said plate, and a drawing up device associated with said first and second female molds for pressing said molds together, a hinge protruding above the plate and adjacent to the female mold edge of the plate, a male die pivotally mounted by means of the protruding hinge to enable the male die to be pressed down into the first female mold.

4,262,377

METHOD OF CONTINUOUSLY EFFECTING THE WET HEAT TREATMENT OF A CLOTH

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,331
Claims priority, application Japan, Oct. 16, 1978, 53/127120; Oct. 16, 1978, 53/127121
Int. Cl.[3] D06B 3/12
U.S. Cl. 8—149.1 1 Claim



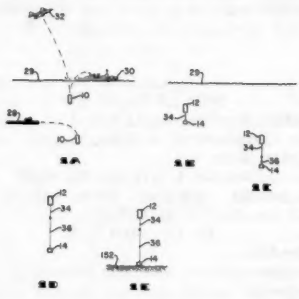
1. A method of continuously effecting a wet heat treatment of a cloth containing polyester fibers in the dyeing thereof comprising impregnating a cloth with a caustic alkali solution, transporting the cloth impregnated with the caustic alkali solution continuously through at least one high pressure steamer body under a saturated water vapor at about 130° C. for a preliminary wet heat treatment to render the surface of the cloth rough, impregnating the thus treated cloth with a dye solution, and then transporting the resultant cloth through two or more high pressure steamer bodies having different functions and directly communicating with each other under a saturated water vapor at about 130° C. for a final wet heat treatment to fix the dye on the cloth and to finish the cloth.

4,262,378

BUOYANT CAPSULE DEPTH CONTROLLER

Charles A. Phillips, Peninsula; John A. Pitrone, Mentor, and Edward W. McGraw, Akron, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jun. 8, 1979, Ser. No. 46,737
Int. Cl.[3] B63B 21/52
U.S. Cl. 9—8 R 16 Claims



1. A buoyant capsule depth controller for use in water, comprising:
- a capsule, buoyant with respect to water;
- a weight assembly, non-buoyant with respect to water;
- a cable maintained by said weight assembly and connected to said capsule;
- a rotatable shaft in operative connection with said cable, the paying out of said cable rotating said shaft;
- a pump connected to and driven by said rotatable shaft, a reservoir maintaining fluid for pumping by said pump, a fluid passageway interconnecting said pump and said reservoir and a valve interconnected within said fluid

passageway for selectively restricting the flow of said fluid through said pump; and

wherein said valve includes a spool movably maintained within a chamber, the first end of said spool being exposed to ambient pressure urging said spool in a first direction, and a second end of said spool in contacting engagement with mechanical adjustment means connected to and controlled by said rotatable shaft for urging said spool in a second direction.

4,262,379

AUTOMATICALLY SURFACING MARKER BUOY FOR LOBSTER OR CRAB TRAPS OR THE LIKE

Walter J. Jankiewicz, 441 El Camino Real, Encinitas, Calif. 92024

Filed Aug. 24, 1978, Ser. No. 936,399
Int. Cl.³ B63B *21/52, 51/02*
U.S. Cl. 9—8 R **20 Claims**

13. The improvement in means for attachment and release of a buoy relative to an object to which the buoy is also tethered by a line, comprising:

(a) releasable attaching means operative to secure said buoy to said object,

(b) an electric timer operative to control release of said attaching means,

(c) a housing and said timer being disposed in said housing which is sealed to prevent water entry, said housing having a magnetically pervious wall, and

(d) means including a magnetic reed switch disposed in said housing near said wall and controlling setting of said timer, whereby said timer may be set by a hand-held magnet external of said housing adjacent to said wall without disturbing the housing seal.

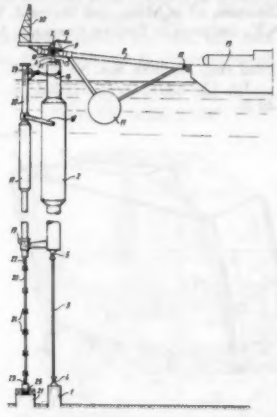
4,262,380

BUOY INCLUDING A MOORING DEVICE

Johannes A. Foolen, Eze sur Mer, France, assignor to Single Buoy Moorings, Inc., Fribourg, Switzerland

Filed Jun. 7, 1979, Ser. No. 46,421
Claims priority, application Netherlands, Jun. 9, 1978, 7806287
Int. Cl.³ B63B *21/52*
U.S. Cl. 9—8 P **5 Claims**

1. In a mooring device comprising a submerged buoy having a submerged portion of relatively large cross-sectional area and intersecting the surface of the water with a portion of relatively small cross-sectional area, a traction-resistant torsionally stiff connection between the buoy and a ground anchor, said connection having joints between the buoy and the anchor, an outrigger by which the buoy is connected above the water level to a buoyant body, means pivotally interconnecting the outrigger and the buoyant body for swinging movement about only a horizontal axis, the outrigger being connected to said portion of relatively small cross section of the buoy by a universal joint above the water level, and a conduit extending from the bottom toward the top of the buoy and by means of a swivel at said universal joint via the outrigger toward the buoyant body; the improvement comprising an auxiliary buoy, guiding arm interconnecting the auxiliary buoy with the first-mentioned buoy, a traction-resistant torsionally stiff connection between said auxiliary buoy and a ground anchor, joints between said last-mentioned connection and said



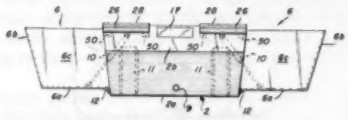
auxiliary buoy and last-mentioned ground anchor, said conduit comprising pipe sections extending parallel to the last-mentioned torsionally stiff connection and having disconnectible flexible tube connections at the upper and lower ends of the last-mentioned connection, said conduit also comprising parts extending through said auxiliary buoy and a tube connection from the top of the auxiliary buoy to the top of the first-mentioned buoy.

4,262,381

AMPHIBIOUS VEHICLE BRIDGE APPARATUS

James A. Blink, 45211 Crown Ave., King City, Calif. 93930, and Alvin E. Nieder, 4910 Turquoise Cir., Colorado Springs, Colo. 80917

Filed Nov. 2, 1979, Ser. No. 90,809
Int. Cl.³ E01D *15/14*
U.S. Cl. 14—2.6 **8 Claims**



1. An amphibious vehicle for forming a section of a floating bridge, comprising

(a) a vehicle body member including a horizontal bottom wall, and generally vertical front and rear end walls;

(b) a pontoon member initially arranged laterally adjacent one side of said vehicle body member, said pontoon member including a bottom wall, a pair of end walls, and a side wall connected between said end walls, whereby said pontoon member is open at one side; and

(c) means pivotally connecting the bottom portion of said pontoon member adjacent its open side with said vehicle body member adjacent the bottom thereof for pivotal movement about a horizontal longitudinally extending pivot axis, said pontoon member being pivotally displaceable from its initial laterally extended position to a re-

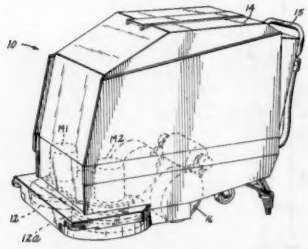
tracted transport position relative to said vehicle body member, respectively, said pontoon member, when in the retracted transport position, being substantially contained between the front and rear end walls of said vehicle body member.

4,262,382

MULTI-SPEED BRUSH CONTROL

Neil F. Brown, Minneapolis; Keith N. Krier, Tonka Bay; Donald J. Haub, Champlin, all of Minn., and Steven J. Waldhauser, Louiston, N.Y., assignors to Tennant Company, Minneapolis, Minn.

Filed Aug. 20, 1979, Ser. No. 67,764
Int. Cl.³ A47L *11/16, 11/202*
U.S. Cl. 15—49 R **14 Claims**



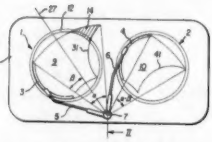
1. Floor maintenance equipment including a plurality of rotary means for maintaining floor surfaces, said rotary means being driven by at least a pair of electric motors and means for varying the speed of said, electric motors, said speed varying means including electric circuitry for switching the voltage level applied to said electric motor means by selectively changing the electrical relationship between said motors from series to parallel and from parallel to series.

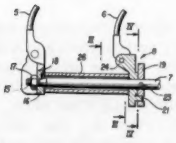
4,262,383

WINDOW-WIPING DEVICE FOR DOUBLE HEADLIGHTS ON MOTOR VEHICLES

Mireille Sohn, Houilles, France, assignor to Regie Nationale des Usines Renault, Houilles, France

Filed Dec. 7, 1979, Ser. No. 101,168
Claims priority, application France, Aug. 12, 1978, 78 34615
Int. Cl.³ B60S *1/28*
U.S. Cl. 15—250.14 **6 Claims**





1. In a device for wiping the windows of double headlights on a motor vehicle, characterized by two angularly displaced wipers driven according to an alternative circular movement on a joint motor shaft located in a zone included between the two neighboring headlights, the improvement comprising:

one of said wipers being mounted on the end of said shaft and being directly driven thereby;

the other of said wipers being freely mounted on said shaft in spaced relation from said one of said wipers; and

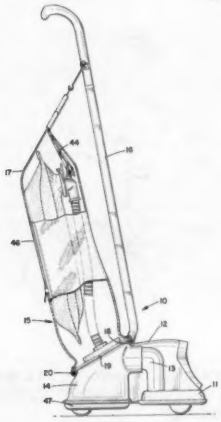
a delaying coupling mounted on said shaft and engaged with said other of said wipers so as to trigger a delay for the setting in motion of the said other of said wipers and reduce its sweeping range in relation to the range of the said one of said wipers.

4,262,384

VACUUM CLEANER BAG ASSEMBLY

William D. Bowers, Avon, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Jan. 25, 1980, Ser. No. 115,349
Int. Cl.³ A47L *5/28*
U.S. Cl. 15—328 **8 Claims**



1. A vacuum cleaner bag assembly for an upright vacuum cleaner comprising a flexible air-permeable outer bag having an upper end adapted to be attached to a handle of a vacuum cleaner, the other end of said outer bag having an open mouth attacheed to an open mouth of a dirt-collecting box, a suction inlet opening in said dirt-collecting box, said open mouth of said box comprising a suction outlet opening from said box, tube means closing said open mouth of said box and in fluid communication with said box and extending toward the top of said outer bag, a disposable inner bag within said outer bag having an inlet opening in fluid communication with said tube means, whereby a vacuum cleaner provided with such an assembly may be operated as a vacuum cleaner with a disposable bag with all of the foregoing elements in place, or as an air-permeable outer bag filter vacuum when the tube means and disposable bag are removed.

4,262,385

WEIGHT-CUSHIONING DEVICE FOR HANDLES AND METHOD OF CONSTRUCTING SAME

Bill Norman, 14431 Galy, Tustin, Calif. 92680

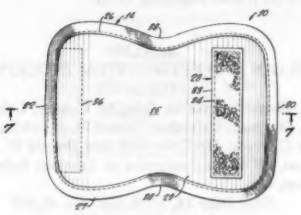
Filed Jan. 2, 1979, Ser. No. 130
Int. Cl.³ B65D *63/18*
U.S. Cl. 16—114 R **22 Claims**

2. A cushioning device adapted to be wrapped around and removably attached to the abutting handles of a hand-carried container comprising

a first layer of relatively thin pliable material,

a second layer of relatively thick pliable and resilient material, said first layer overlying said second layer and being longer than said second layer,

means for joining the entire peripheral edge portions of said first and second layers so that said edge portions are in substantial congruent alignment to provide a common peripheral edge and said layers are curved longitudinally so as to be concave on the side of said second layer, a first fastener means on the first layer and adjacent one end of



said first layer, and a second fastener means on the second layer and adjacent the end of said second layer opposite from said one end of said first layer,

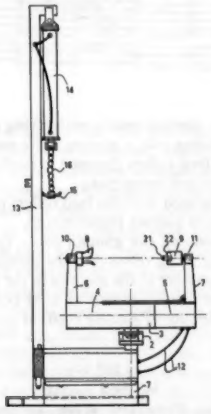
said first and second fastener means being cooperable for forming a removable attachment of said ends upon wrapping of said device around the handles of a container.

4,262,386

APPARATUS FOR HOLDING AN ANIMAL'S HEAD SEVERED FROM ITS BODY

Pierre C. Saget, Vincennes, France, assignor to La Parmentiere P. Blache & Cie, La-Ferriere, France

Filed Nov. 13, 1979, Ser. No. 94,183
Claims priority, application France, Nov. 15, 1978, 78 32248
Int. Cl.³ A22C *17/02*
U.S. Cl. 17—44 **6 Claims**



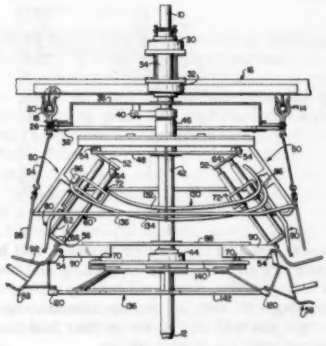
1. Apparatus for holding the head of a slaughtered animal severed from the body thereof, said apparatus comprising a first member engageable with the front of the animal head, a second member engageable with the back or occipital region of the head, means mounting said first and second members for rotation about a common axis, means mounting said first and second members for relative displacement toward each other along said common axis, means for forcibly driving said first and second members relatively toward each other, means associated with one of said members for preventing rotation about said common axis when working on the head, means for moving the lower jaw of the head away from the upper jaw; the improvement comprising said first member being part funnel-shaped and arranged to bear against the upper teeth andor upper jaw of the head and the upper part of the bony region of the snout of the head, when the head is positioned relative to said first member, and said second member having a prong member adapted to penetrate into the foramen magnum of the occipital bone of the head.

4,262,387

METHOD AND APPARATUS FOR EVISCERATING POULTRY

Donald J. Scheier, Kansas City, Mo., and Jack L. Hathorn, Springdale, Ark., assignors to Simon-Johnson Inc., Kansas City, Mo.

Filed Sep. 10, 1979, Ser. No. 74,255
Int. Cl.³ A22C *21/06*
U.S. Cl. 17—45 **26 Claims**



1. Apparatus for eviscerating poultry carcasses including:

means for cocking the neck of a carcass forwardly toward the breast side of the carcass relative to the remainder of the carcass;

a removal tool; and

means for operating said tool in a manner to insert the tool into the body cavity of the carcass through an opening at the stern thereof, capture viscera with the tool while the neck of the carcass is cocked, and withdraw the tool and captured viscera from the cavity.

17. A method of eviscerating poultry carcasses including the steps of:

inserting a viscera-removing tool tip-first into the body cavity of a carcass in an entry stroke via an opening in the stern of the carcass to capture viscera with the tool;

substantially when the tool has reached the full limit of its entry stroke, shifting the shoulders of the carcass toward said tip of the tool to promote, complete viscera removal; and

subsequently pulling the tool tip-last and captured viscera from the body cavity in a withdrawal stroke.

4,262,388

APPARATUS FOR LONGITUDINALLY CUTTING VERTICALLY SUSPENDED ANIMAL CARCASSES

Lucien Durand, Chomerac, and Georges Aubert, La Chapelle de Guinchay, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Continuation of Ser. No. 647,402, Jan. 8, 1976, abandoned. This application May 2, 1979, Ser. No. 35,389
Claims priority, application France, Jan. 10, 1975, 75 00678; Apr. 15, 1975, 75 11631
Int. Cl.³ A22B *5/20*
U.S. Cl. 17—52 **22 Claims**

1. A cutting station located along a moving conveyor for

automatically splitting carcasses of slaughtered animals vertically suspended from said moving conveyor, comprising:

a horizontal extending holder;

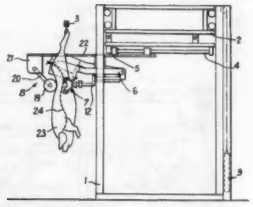
means for vertically moving said holder;

means for horizontally moving said holder as said carcass approaches said cutting station, said horizontally moving means permitting movement parallel with, as well as transverse to, said conveyor;

means carried by said holder for cutting said carcasses; and

means carried by said holder for bearing against diametrically opposite sides of the carcass backbone and for following the backbone when said holder is moved vertically.

22. A method of longitudinally splitting animal carcasses vertically suspended from a conveyor having adjacent thereto at least one cutting station, comprising



providing a holder at said cutting staion, said holder being positioned for movement relative to said conveyor and including cutting means and bearing means,

positioning said bearing means diametrically about said carcass and said cutting means over said carcass as said carcass nears the cutting station,

actuating said cutting means after the bearing means engages the carcass,

moving the holder vertically downward relative to the carcass until the cutting means reaches a predetermined position relative to the carcass, as the carcass passes the cutting station,

deactuating the cutting means after said cutting means reaches said predetermined position, and

moving said holder away from said carcass as said carcass leaves the cutting station.

4,262,389

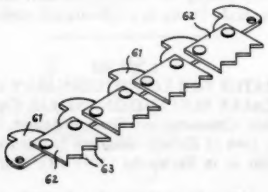
PRAWN/SHRIMP HEADING

Ludwig W. Schwinning, 6 Noongar Way, Riverton, Western Australia, Australia

Continuation-in-part of Ser. No. 883,158, Mar. 2, 1978. This application Oct. 23, 1979, Ser. No. 87,586

Int. Cl.³ A22C *29/02*

U.S. Cl. 17—71 **5 Claims**



1. A prawn/shrimp heading machine comprising a first pair of endless belts arranged with one run of one belt substantially parallel to but spaced apart from one run of the other belt and travelling in the same direction to enable the bodies of the prawns/shrimp to be located therebetween with the heads projecting beyond the peripheries of the first one pair of belts, and a second pair of endless belts arranged in a similar manner to engage the heads of the prawns/shrimp, the path of the second pair of endless belts diverging from the path of the first pair of endless belts each of the belts comprising a length of rubber belting having a series of U-shaped metal members riveted thereto, at least one arm of the metal members being provided with prawn engaging teeth.

4,262,390

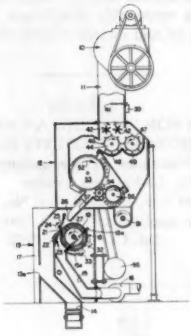
ROLLER GIN AND FEED SYSTEM INCORPORATING THE SAME

Robert R. Einglett, Cataula; John M. Conner, Columbus; William A. Harmon, Columbus; James B. Hawkins, Columbus; William C. Pease, III, Columbus, and Donald W. Van Doorn, Columbus, all of Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed May 21, 1979, Ser. No. 40,689

Int. Cl.³ D01B *1/06*

U.S. Cl. 19—50 **11 Claims**



1. In a cotton ginning system embodying at least one roller gin having a ginning roll, a ginning knife and a feeder having a pair of driven feed rollers disposed to feed seed cotton to the gin, the improvement comprising:

(a) means associated with the feed rollers to single lock bolls of seed cotton passing therethrough,

(b) means mounting the ginning roller for movement into and out of ginning relation to the ginning knife, and

(c) means responsive to the absence in the feeder of a predetermined minimum amount of seed cotton to move the ginning roller out of ginning relation to the ginning knife.

4,262,391

WIRE CLAMP

Douglas E. Peash, Enumclaw, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 29, 1979, Ser. No. 43,418

Int. Cl.³ B65D *63/00*

U.S. Cl. 24—18 **3 Claims**

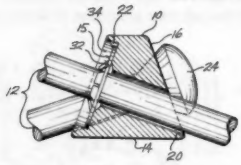
1. A wire clamp for the joining together of members comprising:

a coupler means having a substantially triangular cross section defining first, second and third major surfaces, said first surface being adapted to be placed on at least one of said members to be joined, and a pair of predeterminedly dimensioned passageways being provided between said second and third surfaces;

wire means adapted to be located in a configuration to create

a mating force on the members to be joined, each end of said wire means being routed through one of said coupler passageways and extending from one of said second and third surfaces,

one end of said wire means being provided with a head, said head being of predetermined dimension to frictionally engage the coupler in the area contiguous with the aper-



ture of the passageway through which said wire extends thereby securing said one wire end to said coupler, the remaining wire end being provided with a serrated surface; and

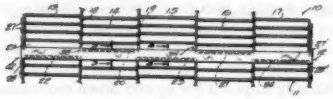
thrust washer means for frictionally engaging said wire end serrated surface to prevent relative slippage between said wire end and said thrust washer, said thrust washer being pressed against, and retained by said coupler surface.

4,262,392

WIRE BELT SPLICER

Donald W. White, Fond du Lac, Wis., assignor to Stoelting, Inc., Kiel, Wis.

Filed Mar. 19, 1979, Ser. No. 21,515
Int. Cl.³ F16G *3/00*
U.S. Cl. 24—36 **6 Claims**



6. A device for splicing the ends of a wire type belt which is composed of a sequence of elongated elements having an overall length in the lateral direction substantially equal to the width of the belt, wherein each elongated element has a zigzag shape to thereby define a sequence of adjacent loops which project alternately in opposite longitudinal directions of the belt and which loops each have a closed end and an open end alternating with each other across the width of belt, the closed ends of the loops on one elongated element being interdigitated with the open ends of the loops on the next longitudinally adjacent element and pin means extending laterally through the interdigitated loops to hinge them together to form a continuous belt, and an improved splicer for joining the free ends of the belt to form a closed belt, said splicer comprising:

a strip for extending laterally of the belt between ends of the belt which are to be spliced together, said strip having longitudinally spaced apart edges,

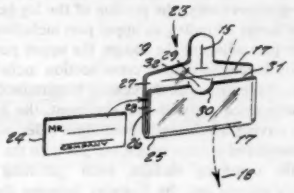
a plurality of laterally spaced apart hook portions extending from opposite edges of said strip with the hook portions on one edge being aligned with spaces between hook portions at the other edge to enable said hook portions on one edge of said strip to engage with sections of a cross pin extending across the open sides of said loops in one end of said belt and to enable said hook portions on the other edge of said strip to engage with sections of a cross pin extending across the open sides of said loops in the other end of said belt.

4,262,393

ADVERTISING CRAVAT HOLDER

Joseph R. Neri, 3101 Quentin Rd., Brooklyn, N.Y. 11234

Filed Jun. 8, 1979, Ser. No. 46,855
Int. Cl.³ A41D *25/04*
U.S. Cl. 24—49 CF **1 Claim**



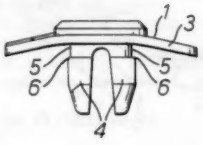
1. An advertising cravat holder, comprising in combination, a flat sheet of transparent plastic die-cut with at least one slot for receiving a shirt button therethrough, at least one pair of cross slots for threading a necktie therethrough, and space where advertising may be printed on said sheet; a horizontal transverse bend thereacross, a lower portion of said flat sheet being folded flat in front of an upper portion thereof, a space pocket therebetween, where a card may be inserted into said space so as to be visible therein, said lower portion thus forming a front side and said upper portion thus forming a rear side of said cravat holder, a semi-circular die-cut slot through both said front and rear sides, said die-cut slot on said front side forming a notch along an upper edge of said front side, and forming a semi circular tab on said rear side, said tab being forwardly pushed into said notch so that said tab rests across at top edge of said card, locking said card from falling out a top of said pocket.

4,262,394

QUARTER-TURN FASTENER

Andrew C. W. Wright, Farnham, England, assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Continuation of Ser. No. 886,149, Mar. 13, 1978, abandoned.
This application Apr. 26, 1979, Ser. No. 33,725
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—73 RM **1 Claim**



1. A quarter-turn fastener for fastening a panel to a support, the fastener comprising an integrally molded plastic stud having a head, and a shank, such shank being formed by a pair of depending resilient legs and said legs each having at its end remote from said head a transverse flange, said transverse flange being adapted to engage the rear surface of the support adjacent a slot through which said stud is mounted, each leg further including an abutment adapted to engage the side of at least one of said support slot and a corresponding slot in said panel after rotation of said stud through substantially a quarter of a turn in either direction to prevent further rotation in the same direction, and a resilient camming surface engaging the side of said slot in said support during said turning of said stud whereby said legs are first forced towards one another and then released during said turning to thus prevent unintentional rotation of said stud from an operative position in which said flanges of said legs abut said rear surface of said support to an

inoperative position in which said flanges can be withdrawn through said support slot, each leg defining a recess adjacent said head, said recesses being adapted to receive therein the sides of said slot in said panel in a snap-fit when said resilient legs are directed through the slot in the panel to retain said stud in said panel by engagement of the opposing panel surfaces by the undersurface of the head and the distal side of the recess on each leg respectively, the portion of the leg between the head and the flange including an upper part including the recess and a lower part adjacent the flange, the upper part having a substantially lozenged-shaped cross section including an arcuate portion concentric with the central longitudinal axis of the stud and communicating with the abutment, the lower part cross section having a substantially straight sided periphery except for a chamfered section which merges with the straight sides to form the camming surface, each camming surface being smoothly curved and the diameter between the camming surfaces of the legs arranged to be wider than the width of the slot to provide the desired resistance to turning movement, and a leaf spring integrally formed with said head and being curved concavely with respect to said legs whereby said fastener is adapted to be outwardly biased of said slot in said panel.

4,262,395

SLIDING CLASP FASTENING MEANS

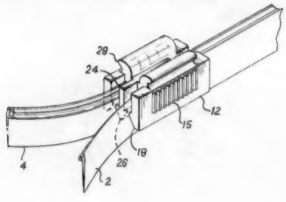
Julius Kosky, Edgware, England, assignor to Hans Bud, London, England

Filed Mar. 7, 1979, Ser. No. 18,466

Claims priority, application United Kingdom, Mar. 9, 1978, 9406/78

Int. Cl.[3] **A44B** *19/00*

U.S. Cl. 24—201 C **9 Claims**



1. Sliding clasp fastening means comprising longitudinally extending mating strips having complementary male and female cross-sections and a sliding clasp of a generally U-shaped cross-section providing a channel fitting over the strips, the channel width tapering in the longitudinal direction of the strips and having, adjacent the end thereof of greater width, a pillar which fits between and holds apart the strips whereby, upon movement of the clasp along the strips with the pillar leading in the direction of movement the strips are forced into interlocking engagement by the sides of the channel whilst movement of the clasp in the reverse direction causes the pillar to effect separation of the strips, characterised in that the clasp is formed at least at one side of a central longitudinal plane thereof extending between and generally parallel with the sides of the channel with means adapted to receive a tool operable to effect resilient separation of the sides of the channel to facilitate fitting of the clasp over the strips.

4,262,396

BUCKLE ASSEMBLY FOR VEHICLE SEAT BELT

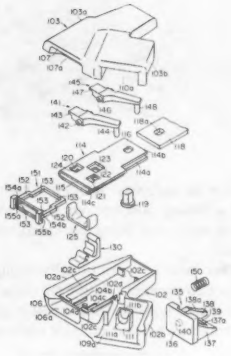
Kiyokazu Koike, Fujisawa, Japan, assignor to NSK-Warner K. K., Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,956

Claims priority, application Japan, Jul. 10, 1978, 53/93919[U]; Sep. 28, 1978, 53/133224[U]

Int. Cl.[3] **A44B** *11/26, 19/00*

U.S. Cl. 24—230 AL **8 Claims**



1. A buckle assembly for a vehicle seat belt comprising:

cover means comprising first and second cover members which together form a tongue inserting opening, a push button operating opening and a hollow chamber in communication with said two openings;

locking means disposed within said chamber for locking to a tongue inserted into said tongue inserting opening, said locking means comprising a base member having a tongue guide passage in communication with said tongue inserting opening and extending in the direction in which the tongue is inserted into said tongue inserting opening and guide slot means in said base member, a locking member slideably disposed for up and down movement normal to said tongue guide passage along said guide slot means, the locking member having a first part which is contacted by said tongue when said tongue is inserted into said tongue inserting opening to move said locking member along said guide slot means to an unlocking position to allow said tongue to come into a locked position and having a second part for locking to said inserted tongue at said locked position, and biasing means disposed on said cover member for biasing said locking member toward a locking position; and

locking member operating means disposed between said first and second cover members and including a push button slideably mounted for movement in a plane generally parallel to the plane of the cover members within said push button operating opening.

4,262,397

METHOD FOR CALENDERING TUBULAR KNITTED FABRICS

Andrew P. Cecere, Valley Stream, N.Y., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 834,514, Sep. 19, 1977, Pat. No. 4,173,812. This application Feb. 23, 1979, Ser. No. 14,738

Int. Cl.[3] **D06C** *5/00;* **D06B** *5/08*

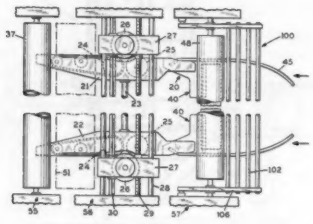
U.S. Cl. 26—84 **2 Claims**

1. A process for treating tubular knitted fabric, which comprises

(a) spreading the fabric tube laterally to a flat, two-layer form and to the fabric's full width whereby the distance

between the two layers of fabric is maintained at a practical minimum,

(b) while thus spreading the fabric and while retaining its flat, two-layer form engaging each of the individual layers of the fabric separately across substantially its full width on each side of the layer with each layer being engaged on its outer side by a control roll and on its inner side by a flat, plate-like element arranged between the two layers whereby the distance between the two layers is maintained at said practical minimum and the substantial full



width of each layer is engaged by the control roll and flat, plate-like element,

(c) while thus engaging the fabric, controllably advancing each of the individual layers independently by independent speed control of said control rolls,

(d) initially engaging and controllably advancing the side edge regions of said fabric following the controllable advancement of said individual layers,

(e) steaming the fabric and thereafter calendering the steamed fabric.

4,262,398

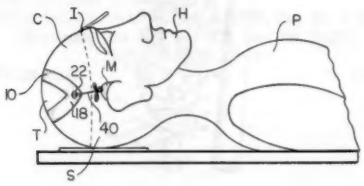
CALVARIUM CAP

William L. Cotter, 533 E. Mulberry St., Watseka, Ill. 60970

Filed Nov. 5, 1979, Ser. No. 91,044

Int. Cl.³ A61N *1/00*

U.S. Cl. 27—21 **8 Claims**



1. A calvarium cap adapted to hold a detached calvarium against the rest of the skull comprising:

a piece of elongated material of a generally eliptical shape,

said piece of material has a first curved member which is joined by a second curved member to form first and second ends;

said piece of material has an elongated space in the central region thereof between said members;

said piece of material has first and second holes, of relatively small diameter, respectively adjacent said first and second ends; and

first and second eyelets inserted through said first and second relatively small diameter holes with first and second ligatures attached to said first and second eyelets such that said piece of material is positionable across the top of the calvarium and said ligatures are each attachable to adjacent muscle tissue on the skull to firmly hold the calvarium against the skull.

4,262,399

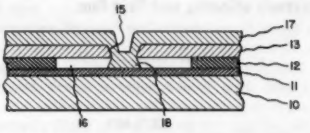
ULTRASONIC TRANSDUCER FABRICATED AS AN INTEGRAL PARK OF A MONOLITHIC INTEGRATED CIRCUIT

William R. Cady, Scotia, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,799

Int. Cl.³ H01G *7/00*; H01L *21/308*

U.S. Cl. 29—25.42 **8 Claims**



5. A method of fabricating an electrostatic transducer in combination with electronic processing circuitry on a monolithic integrated circuit chip comprising the steps of;

fabricating the monolithic electronic circuitry on selected regions of a semiconductor substrate up to the stage of making contact windows and interconnections to circuit elements, and reserving a portion of the substrate area as a transducer region,

depositing at least first and second insulating layers on the surface within the transducer region boundaries and on at least part of said electronic circuitry,

etching contact windows to selected circuit elements,

depositing a third layer on said second layer and making a pattern of etch holes in said layer within the transducer region boundaries,

laterally etching said second insulating layer using the apertured third layer as a mask to create void regions which extend from each etch hole laterally beneath the third layer,

depositing a conductive sealing layer on at least said third layer which extends through said contact windows and into said etch holes to seal off each void region and form a transducer structure capable of sensing received ultrasonic energy, and

etching at least said sealing layer to provide interconnections for the transducer and monolithic electronic circuitry.

4,262,400

SUPPORT MEMBER

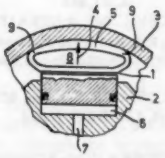
Hans Miesch, Zurich, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Jul. 18, 1979, Ser. No. 58,457

Claims priority, application Switzerland, Aug. 4, 1978, 8351/78

Int. Cl.³ B21B *31/32*

U.S. Cl. 29—116 AD **6 Claims**



1. Support member which is provided between a stationary carrier and a roller shell arranged so as to be rotatable about the carrier, the support member being intended to support this roller shell by being designed to receive a force acting radially from the carrier towards the roller shell and transmit this force to the shell via a head portion of the support member facing the

roller shell and a film of fluid provided between the head portion and the roller shell; the head portion having a central flexible part which bridges an underlying free space in the support member and which is flanked by marginal parts spaced laterally from the line of action of said radially acting force; and the support member being constructed to transmit at least the main part of said radially acting force through said marginal parts of the head portion so that the central bridging part is free to deflect radially as needed to accommodate changes in the diameter of the shell and thereby prevent such changes from adversely affecting said fluid film.

4,262,401

HYDROSTATIC SUPPORT MEMBER

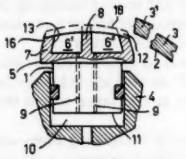
Hans Miesch, Zurich, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Sep. 5, 1979, Ser. No. 72,588

Claims priority, application Switzerland, Sep. 20, 1978, 9810/78

Int. Cl.³ B21B *31/32*

U.S. Cl. 29—116 AD **3 Claims**



1. A fluid pressure actuated hydrostatic support member for supporting an element which slides relatively to the support member via an interposed film of fluid, the support member having a head portion containing at least one pressure pocket which opens toward said element and is bounded at the outside by a lining wall having an interior surface which faces the pocket and an exterior surface which is exposed to the environment surrounding the support member, said interior surface being inclined relative to the pressure axis of the support member so that the profile of the pocket increases towards its base, and the shapes of said two surfaces being so correlated that, when the lining wall is lowered towards the base, the hydrostatically effective area of the head portion which faces said element increases.

4,262,402

METHOD FOR SERVICING A STEAM GENERATOR

Frank W. Cooper, Jr., and Raymond P. Castner, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 18, 1978, Ser. No. 952,431

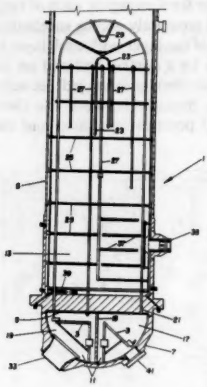
Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.4 **9 Claims**

1. A method of servicing a steam generator in which tubes are inserted in an array of holes in a tubesheet, said method comprising the steps of:

mapping the tubesheet by maneuvering a probe across the tubesheet to precisely locate each of said holes, generating a representation of each precise hole location and storing each of said representations; and

maneuvering a tool sequentially to the precise location of each hole in the tubesheet in response to said stored representations of said hole locations and controlling said tool



to perform a preselected operation at each such hole location.

4,262,403

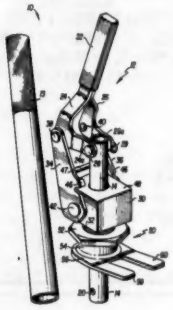
VALVE SPRING COMPRESSOR TOOL

Kenneth W. Wilhelm, Elyria, and Ralph R. Bellino, Cleveland, both of Ohio, assignors to W. R. Grace & Co., New York, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,776

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—220 **18 Claims**



1. A valve spring compressor tool comprising

a support rod having an internal portion threaded at one end to threadably engage a rocker arm stud;

a handle pivotally connected to the other end of the support rod by first pivot means;

a body element extending along and slidably mounted on said support rod;

interconnecting linkage means pivotally connected to said body element by second pivot means and pivotally connected to said handle by third pivot means;

said first and third pivot means on said handle being in spaced relation to each other; and

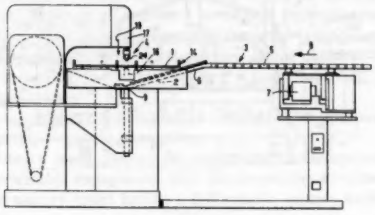
valve spring engaging means on said body element comprising extending finger members to engage the valve spring, whereby when the support rod is mounted on a rocker arm stud and the handle is moved to the spring compressed position, the body element is lowered on the support rod and the valve spring engaging means engages and compresses the valve spring.

4,262,404

DEVICE FOR JOINING A SUSPENSION OR FASTENING DEVICE WITH A FOLDER OR THE LIKE

Eberhard Hang, Göppingen, and Matthias Kastl, Göppingen-Holzheimg both of Fed. Rep. of Germany, assignors to Firma Constantin Hang GmbH & Co., Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,382
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1977, 2753123
Int. Cl.[3] B23P *11/00*
U.S. Cl. 29—243.53 9 Claims



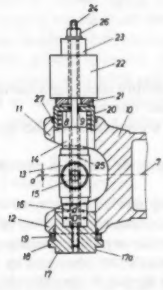
1. A riveting device, for joining a suspension or fastening device, particularly a ring binder mechanism, to a folder, comprising, first holder means for holding the folder, second holder means for holding the fastening device relative to the folder with one superposed over the other, riveting means overlying said first holder means and said second holding means for joining the fastening device to the folder and lifting means for engaging one of the folder and the fastening device for moving it relative to the other and into engagement therewith below said riveting means in a position to be riveted together thereby.

4,262,405

METHOD FOR INSTALLING A BEARING IN A UNIVERSAL COUPLING

Reinhard Bretzger, Gerstetten-Dettingen; Fritz Kienle, Königsbronn-Zang, and Hans Lindenthal, Heidenheim-Mergelstetten, all of Fed. Rep. of Germany, assignors to Voith Transmit GmbH, Fed. Rep. of Germany

Division of Ser. No. 903,053, May 5, 1978, Pat. No. 4,182,011. This application Jun. 27, 1979, Ser. No. 52,815
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—252 3 Claims



1. Apparatus for emplacing a bearing sleeve in an opening in a fork eye of a coupling fork of a universal coupling which coupling is comprised of two coupling forks; said apparatus comprising:

a coupling fork of a single integral piece and having two spaced apart fork eyes;

a crosspiece, having two pins thereon; each said pin extending toward one of said fork eyes; said crosspiece having a bore therein extending along the axes of said two pins thereof;

an opening extending through one one said fork eye and being alignable with said bore in said crosspiece;

a bearing sleeve shaped to be fitted simultaneously in said fork eye opening and over the one of said pins which extends toward said one fork eye; said sleeve having a base; a bore through said base and said bore being alignable with said bore in said crosspiece; said bearing sleeve being placed at said opening of said one fork eye above said fork eye;

a tie rod extending through said crosspiece, through said one fork eye and through said base bore of said sleeve, and also being supported at the other said fork eye in such a manner that said sleeve is aligned both with said fork eye opening and with said one pin, whereby said sleeve can be simultaneously fitted into said fork eye opening and fitted over said one pin; and

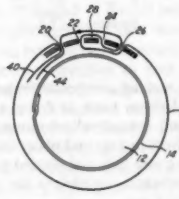
pressure applying means placed for applying pressure to said bearing sleeve for moving said bearing sleeve into said fork eye opening and for simultaneously fitting said sleeve over said one pin.

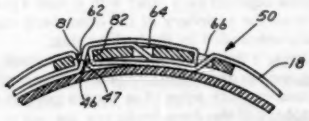
4,262,406

METHOD OF ASSEMBLING STRAPPING

Lloyd A. Fredrickson, Denver, and James G. VanAusdall, Englewood, both of Colo., assignors to Ceel-Co, Lakewood, Colo.

Filed Oct. 12, 1979, Ser. No. 84,292
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—433 3 Claims





1. A method of securing a length of strap around an object and to a fastener having an outer face and an inner face and having slot means including first and second opposed inside edges, an intermediate slot, and an end slot, said method comprising the steps of:

threading a first end portion of the strap from the outer face of the fastener through said fastener between said first and second inside edges, then along the inside face of the fastener and out through said end slot;

pulling said first end portion of the strap around the object;

threading said first end portion of the strap from the outside of the fastener through the fastener between the inside edges and folding said first end portion back upon itself to form a first strap looped end portion;

pulling a second end portion of the strap while holding the fastener to tighten the strap around the object;

threading said second end portion of the strap from the outside face through said intermediate slot, along said inner face, and out through said end slot to form a second strap looped end portion; and

folding the second end portion of the strap from the outer face of the fastener back upon itself and then through the fastener between said inside edges.

4,262,407

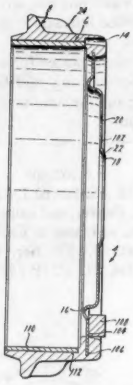
METHOD FOR MANUFACTURING A COMPOSITE BRAKE DRUM

Larry D. Petersen, Garden City, and Stanley C. Squires, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 858,913, Dec. 8, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,715

Int. Cl.[3] B23P *3/00, 19/04*

U.S. Cl. 29—460 **4 Claims**



1. A process for making composite brake drums comprising:

stamping a steel drum back to have a midsection with a center hole and spaced wheel mounting holes in a first plane, a periphery in a second plane and an annular convolute integrating said first and second planes and extending in part in a direction parallel to the central axis toward said braking surface;

positioning said steel drum back and a cast iron braking ring having a rough outer surface and a smooth inner braking surface adjacent each other with at least a portion of both sides of the periphery of the drum back exposed to the space unbounded by the braking ring;

die casting a light metal barrel about the cast iron braking ring and the drum back such that the die casting produces a bond on both sides of at least a portion of the outer periphery of the drum back.

4,262,408

ASSEMBLING HOSE UNITS FOR APPLIANCES

Ernest D. Johnson, Wildwood, Ill., and David L. Braun, North Canton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

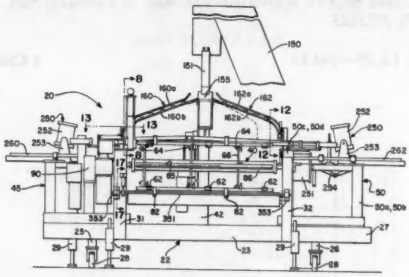
Filed Jun. 27, 1979, Ser. No. 52,651

Int. Cl.[3] B21D *19/00;* **B23P** *21/00*

U.S. Cl. 29—507 **30 Claims**

1. A method of assembling a hose unit composed of a given length of hose and a pair of hose couplings one at each end of the length of hose, the method comprising measuring and cutting off said given length from a supply of hose, placing said given length of hose in a rigid tube of a length only slightly less than said given length and of transverse inside dimensions at least sufficiently greater than the transverse outside dimensions of the hose to permit the hose to move freely longitudinally of said tube, and simultaneously inserting said couplings one into each end of the given length of hose while the latter occupies said rigid tube.

10. An apparatus for assembling a hose unit composed of a given length of hose and a pair of hose end couplings one at each end of the length of hose, the apparatus comprising holding means for supporting said given length of hose without longitudinal restraint thereof, moving means for moving said holding means stepwise to a plurality of successive stations, infeed means for feeding said given length of hose longitudinally into said holding means, a pair of inserter means cooperable simultaneously to insert a hose end coupling in each end of said given length of hose in said holding means, and support means including a frame constructed and arranged to support in cooperable relation said holding means, said moving means, said infeed means, and said pair of inserter means.



4,262,409

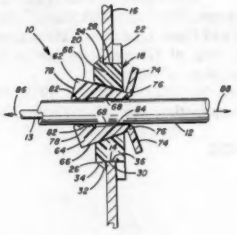
CABLE CONNECTOR

Edward A. Madej, Verona, Pa., assignor to Robroy Industries, Verona, Pa.

Filed Apr. 24, 1978, Ser. No. 899,503

Int. Cl.[3] F16L *5/00*

U.S. Cl. 29—526 R **17 Claims**



1. A method for releasably securing a member in an aperture of a supporting structure comprising,

releasably engaging a connector in the aperture of the supporting structure,

positioning an engaging device in a passageway of the connector,

retaining the engaging device in an operative position in the passageway of the connector to receive the member,

inserting the member through the aperture of the supporting structure and through the passageway of the connector after the engaging device is operatively positioned in the passageway,

positioning the member in abutting relation with the engaging device so that the engaging device is between the connector and the member in the passageway,

exerting a force upon the member to move the engaging device longitudinally in the passageway in a direction being opposite to the direction of insertion of the member in the passageway to a first position to wedge the engaging device between the connector and the member and

thereby secure the member in the aperture of the supporting structure,

exerting a force upon the member to move the engaging device longitudinally in the passageway in the direction of insertion of the member in the passageway to a second position permitting the member to pass freely in the aperture of the supporting structure, and

connecting the engaging device to the connector by a flexible resilient means,

extending the flexible resilient means between the engaging means and the connector, and

releasably retaining the engaging means by the flexible resilient means in an operative position in the passageway of the connector in the absence of the member in the passageway to thereby permit insertion of the member in the passageway with the engaging means positioned in the passageway.

6. A connector for securing a member in an aperture of a supporting structure comprising,

a unitary insert adapted for positioning in the aperture for releasable engagement with the supporting structure,

said unitary insert having a deformable, unitary body portion with a passageway therethrough,

said passageway having an inlet and an outlet with at least one inclined wall extending from said inlet to said outlet to form said passageway with a tapered configuration so that the cross sectional area of said passageway increases from said inlet to said outlet,

said deformable, unitary body portion having expansion and contraction means for releasably positioning said unitary insert in the aperture,

engaging means movably retained in said passageway for engaging the member with said unitary insert to thereby secure the member in the aperture of the supporting structure,

said engaging means being positioned in said passageway of said unitary insert to receive the member for movement through the aperture of the supporting structure,

means for retaining said engaging means within said passageway of said unitary insert when said unitary insert is positioned in the supporting structure and the member is removed from said passageway,

said means for retaining includes flexible resilient means for connecting said engaging means to said unitary insert,

said flexible resilient means extending between said engaging means and said unitary insert,

said flexible resilient means being operable to releasably retain said engaging means in an operative position in said passageway in the absence of the member in said passageway to thereby permit insertion of the member in said unitary insert passageway with said engaging means positioned in said unitary insert passageway,

said engaging means having a first surface and a second surface,

said engaging means first surface arranged to abut said inclined wall of said passageway,

said engaging means second surface being adapted to engage the member in said passageway of said unitary insert so that said engaging means becomes wedged between said inclined wall of said unitary insert passageway,

said tapered configuration of said passageway being arranged to permit said engaging means to move in a direction in said passageway from said inlet to said outlet so that the member is movable in a first direction in said passageway and the supporting structure, and

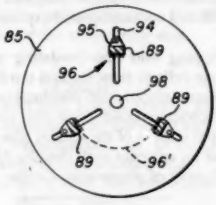
said engaging means being restrained from movement in said passageway from said outlet to said inlet to restrain the member from moving in a second direction in said passageway and the supporting structure.

4,262,410

PROTECTOR REMOVAL TOOL

Royce G. Roberts, P.O. Box 1296, Kenai, Ak. 99611

Filed Dec. 4, 1978, Ser. No. 965,908
Int. Cl.[3] B08B *9/02*; B23P *19/04*
U.S. Cl. 29—560 15 Claims



1. Apparatus for removing protective members from the threaded ends of pipe joints comprising a main frame, a reciprocating bearing means, a rotating head assembly, an elongated shaft, means for imparting rotational motion into said shaft;

said head assembly includes a first mount member and a second mount member concentrically arranged in spaced relation to one another and axially arranged respective to said shaft; a plurality of gripping members, a plurality of long arms having one end affixed in journaled relationship to said first mount member, a plurality of short arms having one end affixed in journaled relationship to said second mount member; means by which each of said gripping members is journaled to the other end of one of said long arms and to the other end of one of said short arms;

means rotatably supporting said first mount member from said reciprocating bearing means, means for reciprocating said bearing means respective to said mean frame; said shaft having an end affixed to said second mount member;

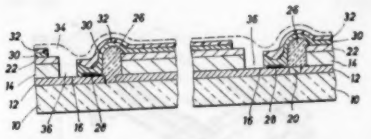
whereby said first mount member can be moved respective to said main frame member, thereby changing the relative distance between the gripping members, while said gripping members are rotatably about the axial centerline of the shaft, so that the gripping members can jointly engage and rotate a threaded member respective to a complementary threaded member, and thereafter the gripping members can release the first recited threaded member.

4,262,411

METHOD OF MAKING A SOLAR CELL ARRAY

John F. Jordan, and Curtis M. Lampkin, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Continuation of Ser. No. 831,544, Sep. 8, 1977, abandoned. This application Aug. 7, 1979, Ser. No. 64,360
Int. Cl.[3] H01L *31/18*
U.S. Cl. 29—572 11 Claims



1. A method of forming a series-connected backwall array of photovoltaic cells on a common substrate surface from a first film of transparent and electrically conductive material contacting said glass surface and an overlying second film of at least one semiconductor material conterminous with said first film, comprising the steps of:

selectively removing portions of said first and second films to form a plurality of potovoltaic cells spaced apart on

said substrate and each with an exposed area of said first film,

depositing a first insulating material along an edge portion of each of said second films adjacent said exposed area of said first film,

depositing a third film of a second electrically conductive material conterminously overlying said plurality of photovoltaic cells and contacting said exposed areas of said first film, and

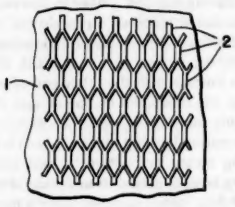
therafter stripping said first insulating material from said photovoltaic cells to separate said third film into a plurality of spaced, electrically conductive films, each said spaced, electrically conductive film electrically contacting the upper surface of the second film of one cell and the first film of an adjacent cell, thereby forming said series-connected array of photovoltaic cells.

4,262,412

COMPOSITE CONSTRUCTION PROCESS AND SUPERCONDUCTOR PRODUCED THEREBY

William K. McDonald, Salem, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed May 29, 1979, Ser. No. 42,893
Int. Cl.³ H01L *39/24*
U.S. Cl. 29—599 **9 Claims**



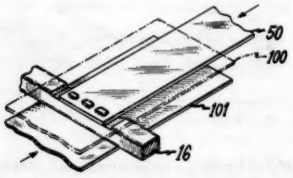
1. A method of producing a composite of two metals comprising forming a lamina of the two metals, one metal in expanded form having a mesh or foraminous type configuration, rolling the lamina into a coil to form a billet and subsequently elongating the billet.

4,262,413

METHOD AND APPARATUS FOR MAKING AN ELECTRICAL COIL WITH INSULATED LEAD STRUCTURE

James W. Morton, Hickory, N.C., assignor to General Electric Company, Phila, Pa.

Filed Apr. 30, 1979, Ser. No. 34,793
Int. Cl.³ H01F *41/10*; H01R *43/00*
U.S. Cl. 29—605 **13 Claims**



1. A method of making a coil from conductive wire having an insulating coating bonded thereto and for providing the coil with at least one conductive lead, comprising the steps of:

a. winding said coated wire about a coil axis while advancing the wire along its length past a work station,

b. stopping the winding operation when a predetermined region of the wire is located at said work station,

c. removing a section of said insulating coating from said predetermined region of said wire located at said station, thereby exposing a section of bare wire at said station,

d. placing in contact with said section of bare wire a thin conductive strap that extends transversely of said wire at said station and forms said lead,

e. cold-welding said strap to said section of bare wire by forcing said strap against said bare section with a force that produces metal flow and a resulting cold-weld joint at the interface of said strap and said bare section,

f. covering said joint and a portion of said lead with electrical insulation by applying to opposite faces of said lead two strips of insulating material that extend transversely of said wire for substantial distances on opposite sides of said wire,

g. bonding said strips of insulating material together, and

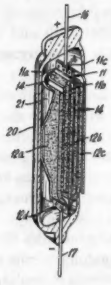
h. continuing said winding operation to further form said coil with said strips of insulating material extending generally parallel to said coil axis.

4,262,414

METHOD FOR MANUFACTURING A HERMETICALLY SEALED ELECTROCHEMICAL STORAGE CELL

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Division of Ser. No. 932,922, Aug. 11, 1978, Pat. No. 4,186,246. This application Mar. 2, 1979, Ser. No. 16,969
Int. Cl.³ H01M *10/04*
U.S. Cl. 29—623.2 **10 Claims**



1. A method of manufacturing an electrochemical storage cell, comprising:

providing a glass enclosure having at least one opening therethrough;

forming an electrode assembly comprising at least one anode electrode, at least one cathode electrode and a porous separator therebetween, said electrodes containing electrochemically active material and having terminal conductors affixed thereto;

inserting said electrode assembly into the glass enclosure through one opening so that each of said terminal conductors extends through an opening from the interior of said glass enclosure to the exterior thereof;

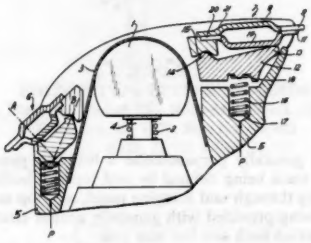
impregnating said porous separator with a liquid electrolyte in an amount capable of being substantially completely adsorbed by the separator, thereby to avoid the presence of free liquid electrolyte in the cell; and

hermetically sealing the electrode assembly within the interior of the glass enclosure so as to provide terminal conductors fused to said enclosure and extending exteriorly of a cell casing formed by said sealed enclosure, while maintaining said liquid electrolyte adsorbed in said separator and thereby rendering said sealed cell operative upon charging thereof.

4,262,415
HAIR TRIMMER

Gebhard Braun, Kelkheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,716
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2836959
Int. Cl.³ B26B *19/10*
U.S. Cl. 30—34.1 10 Claims

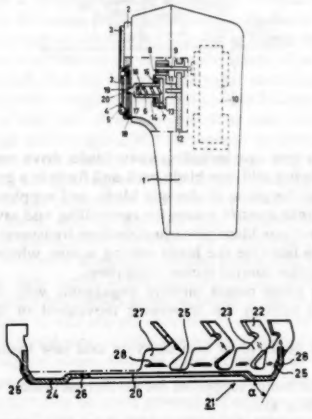


1. A hair trimmer, particularly for dryshavers, comprising a frame; a shear blade assembly, comprising a stationary first member on said frame and a second member in sliding engagement with said first member; biasing spring means between said frame and second member and exerting biasing forces in direction towards first locations of said second member; and means stationary with respect to the sliding movement of said second member and being interposed between said biasing spring means and said second member for diverting said biasing forces to preselected second locations of said second member.

4,262,416
SHAVING APPARATUS

Dirk J. Van Hemmen; Jan Reinink, and Jochem J. de Vries, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,514
Claims priority, application Netherlands, Nov. 28, 1977, 7713049
Int. Cl.³ B26B *19/14*
U.S. Cl. 30—43.6 2 Claims

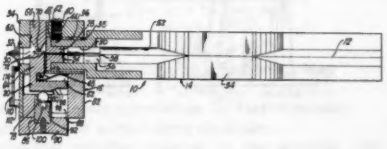


1. A shaving apparatus having a circular shear plate provided with hair-entrance apertures and a cutting member associated with and rotatable relative to the shear plate; said cutting member comprising a circular central body, cutters extending from the circumference of said central body toward the shear plate, a radially outwardly conically shaped bent reinforcement rim at the periphery of the central body, and connecting arms respectively securing said cutters to said central body at the outer edge of said reinforcement rim, the part of each connecting arm adjoining the reinforcement rim being substantially rectangular and having a width greater than that of the remainder of the connecting arm.

4,262,417
TOOL FOR CLEAVING FIBER OPTIC ELEMENTS

Maurus C. Logan, Elizabeth; Peter Garner, Chatham, and Nicholas T. Stancati, Mountainside, all of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed Mar. 5, 1979, Ser. No. 17,344
Int. Cl.³ B26B *3/00*
U.S. Cl. 30—140 14 Claims



1. A tool for use in cleaving a fiber optic element into first and second portions, said tool comprising:

support means including an elongate handle for supporting along its longitudinal axis a fiber optic element;

grooving means for forming a groove in the surface of said fiber optic element;

engagement causing means for causing engagement of said grooving means with a fiber optic element supported by said handle;

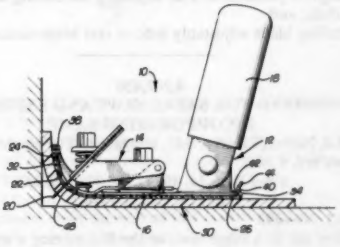
a housing for supporting said grooving means and said engagement causing means; and

mounting means for rotatably mounting said housing and thereby said grooving means on said handle, said mounting means including a circumferential groove in said handle, a recess in said housing and ball members in said recess and engaging said circumferential groove for supporting and retaining said housing for relative rotational movement about the axis of said handle.

4,262,418
BOOT FOR TRIMMER FOR RESILIENT FLOOR COVERING MATERIAL

Harvey J. Hill, Monterey Park, and Wolfgang Spiegelstein, Glendale, both of Calif., assignors to Roberts Consolidated Industries, Inc., City of Industry, Calif.

Filed Aug. 20, 1979, Ser. No. 67,778
Int. Cl.³ B26B *29/00*
U.S. Cl. 30—287 6 Claims



1. A boot for a floor covering trimmer having a base pro-

vided at the rear thereof with an upwardly extending handle and carrying at the front thereof at least one forwardly and downwardly extending blade, said boot being of a size and shape to completely cover the bottom of the base and having means for attachment to the base, said boot also having at the front thereof an opening for the blade, said boot having at the front, rear and ends thereof upstanding walls which engage the front, rear and ends of the base.

4,262,419

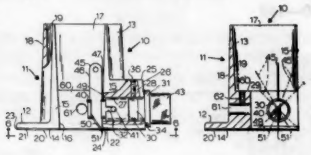
HAND-HELD CUTTER FOR CUTTING MOUNTING BOARD AND THE LIKE

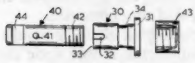
Donald C. Pierce, 1253 C Redwood Blvd., Novato, Calif. 94947

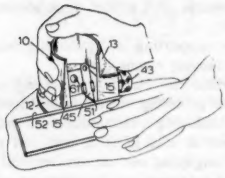
Continuation-in-part of Ser. No. 22,423, Mar. 21, 1979, abandoned. This application Jul. 6, 1979, Ser. No. 55,345

Int. Cl.[3] B26B *29/00*

U.S. Cl. 30—293 **14 Claims**







1. A handheld cutter for cutting mounting board and the liké, including in combination:

a handle and support member shaped as an annular segment bounded by a pair of aligned substantially vertical planar surfaces extending on both sides of a gap in the annulus, and having a generally flat bottom wall and an upstanding hand-engaging portion, said bottom wall having rounded corners and a lower surface of low-friction plastic,

blade-holding means secured to said handle and support member along an axis parallel to said planar surfaces for retaining, on a plane through said axis and inside said annulus adjacent said gaps, a cutting blade at a plurality of angular positions and for adjusting the cutting depth of the blade, and

a cutting blade adjustably held in said blade-holding means.

4,262,420

CROSSHEAD FOR SABRE SAWS AND SABRE SAWS INCORPORATING SAME

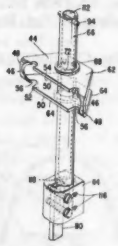
David J. Nalley, Liberty, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 14, 1979, Ser. No. 103,662

Int. Cl.[3] B27B *19/00*

U.S. Cl. 30—392 **6 Claims**

1. For use in a sabre saw, or the like having a scotch yoke mechanism operated by a motor for reciprocating a saw bar, a crosshead in the scotch yoke mechanism formed of sheet stock to a configuration providing a closed straight track perpendicular the saw bar and having bridges across the ends of said track said crosshead being of a generally U-shaped configuration having a pair of generally parallel top and bottom panels



extending generally perpendicular a bridging panel thereof with said track being defined by said top and bottom panels and passing through said bridging panel, said top and bottom surfaces being provided with generally central circular holes through which such saw bar may pass.

4,262,421

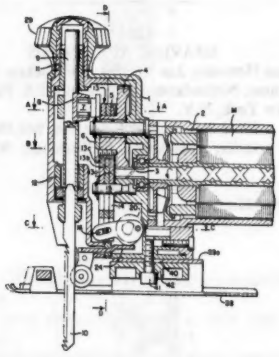
KEYHOLE SAW

Otto Bergler, and Eugen Lutz, both of Mühlacker-Lomersheim, Fed. Rep. of Germany, assignors to Eugen Lutz GmbH & Co. Maschinenfabrik, Mühlacker, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 932,858, Aug. 11, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,763

Int. Cl.[3] B27B *11/02*

U.S. Cl. 30—393 **13 Claims**



1. Keyhole type saw including a saw blade, drive means for drivingly moving said saw blade back and forth in a generally linear path in the plane of the saw blade, and supplementary transverse stroke control means for controlling said saw blade to move in said saw blade plane in directions transverse to said linear path to improve the blade cutting action; wherein said transverse stroke control means comprises:

saw blade guide means directly engageable with the saw blade to control the transverse movement of the saw blade,

a movable guide lever arm carrying said saw blade guide means,

rotary plate means supported for pivotal movement about a rotary plate axis,

swing arm means pivotally attached to said rotary plate means at a swing arm axis eccentrically spaced from said rotary plate axis, said swing arm means including control cam means engageable with a corresponding cam surface

of said guide lever arm to control the position of said guide lever arm is dependence on the position of the swing arm means,

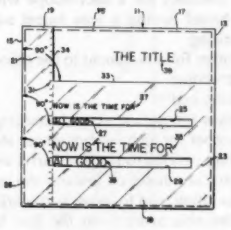
and adjusting means for adjusting the rotative position of the rotary plate means about the rotary plate axis so as to adjust the position of the eccentrically spaced swing arm axis and therewith the control path of the saw blade guide means.

4,262,422

FOLDER TYPE LETTERING GUIDE

James S. Pass, 165 Tartan Dr., Rochester, Mich. 48063

Filed Sep. 20, 1979, Ser. No. 76,982
Int. Cl.³ B43L *13/02*; G09B *11/02*
U.S. Cl. 33—41 B **3 Claims**



1. A lettering guide comprising a folder including a strip of material folded over itself to provide a bottom support sheet, an overlying top hold-down sheet, and an upright fold edge contiguous to and defined at the intersection of said bottom support sheet and said top hold-down sheet, said top hold-down sheet including an upright margin area of a generally rectangular shape parallel to and contiguously adjacent said upright fold edge, said top hold-down sheet further including an elongated slot having a first uniform height, said elongated slot being formed through said top hold-down sheet and extending adjacent to said margin area so as to have a length less than the width of said top hold-down sheet, said elongated slot having a longitudinal axis extending at right angles to said upright fold edge, said overlying top hold-down sheet and said bottom support sheet being adapted to snugly and frictionally receive therebetween a rectangular sheet of paper to be lettered such that one edge of said paper sheet extends to and is in cooperative registry with said upright fold edge for insuring that a first line of lettering written onto said paper sheet through said elongated slot throughout its uniform height will be lettered in a straight line, said straight line of lettering extending at right angles to said upright fold edge and said one edge of said paper sheet and whereby on advancing said paper sheet along said upright fold edge relative to said top and bottom sheets, additional lines may be lettered thereon with all such additional lines being parallel to said first line of lettering and at right angles to said one edge of the paper sheet;

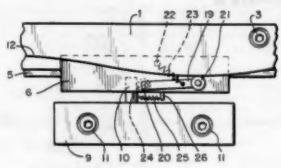
said top hold-down sheet including a cut out portion adjacent to said margin area and having a top edge which is disposed substantially below the top edge of said bottom support sheet, said top edge extending at right angles to said upright fold edge whereby the underlying sheet of paper may be easily grasped for relative movement within said folder along said upright fold edge and wherein said sheet of paper may be lettered therealong with the height of the letters being selectively variably different as determined by the user.

4,262,423

ERROR CORRECTION APPARATUS FOR A LENGTH-MEASURING INSTRUMENT AND METHOD FOR GENERATING AN ERROR CORRECTION PROFILE

Alfred Affa, Stein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,118
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820753
Int. Cl.³ G01B *11/02*
U.S. Cl. 33—125 A **6 Claims**



1. A precision measuring instrument comprising:

a carrier member;

a measuring scale mounted on the carrier member;

a scanning unit guided along the scale;

a coupling member coupled to the scanning unit and mounted to an object whose position is to be measured;

an error correction profile included in and formed in one piece with the carrier member as an integral part of the carrier member; and

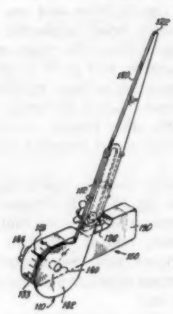
means, responsive to the error correction profile, for modifying the relative position of the scanning unit with respect to the scale to effect an error correction corresponding to the contour of the error correction profile.

4,262,424

GAUGE FOR DETERMINATION OF SHOULDER BONE ANGLES IN HORSES

William W. Hornbeck, Box 461, Mira Loma, Calif. 91752

Filed May 25, 1979, Ser. No. 42,562
Int. Cl.³ G01B *3/56, 5/00*
U.S. Cl. 33—174 D **8 Claims**



1. A gauge for the determination of the slope of the shoulder bones of a horse, comprising:

locating means including at least one concave cup concentric with a pivot axis and adapted to be positioned over the point of the horse's shoulder,

pointer means rotatable about said pivot axis and adapted for alignment with the axis of the horse's shoulder bone,

reference level means rotatable about the pivot axis for establishment of a local horizontal vector,

clamp means releasably securing the pointer means and the

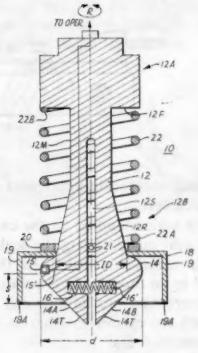
reference level means for selective relative rotation and securement in selected positions of relative rotation, and protractor means for indicating the relative angle between the pointer means and the reference level means.

4,262,425

SELF-ADJUSTING INSPECTION APPARATUS

Joseph G. Sabato, Fairfield, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 13, 1980, Ser. No. 159,080
Int. Cl.³ G01B 7/12
U.S. Cl. 33—178 R **10 Claims**



1. Self-adjusting inspection apparatus for inspecting apertures of a predetermined size range between a minimum inspection dimension and a maximum inspection dimension, which comprises:

probe shaft means having a pair of opposing ends and a midsection with one of said opposing ends adapted to be coupled to operator means and the other of said opposing ends including a ramp portion of generally increasing cross section with respect to the cross section of said midsection;

probe head means coupled to said probe shaft means at said ramp portion remote from said one opposing end, said probe head means being adjustable over the predetermined size range between the minimum dimension and the maximum dimension, said probe head means including at least two cooperating sections coupled together through first biasing means which normally urges said sections away from each other toward the maximum dimension and which when urged together present the minimum dimension;

ramp loading means slidably positioned around said ramp portion and having an inside dimension such that as said ramp loading means slides along said ramp portion from said one opposing end of said shaft means toward said probe head means said two cooperating sections are caused to be urged together and the minimum dimension is approached; and

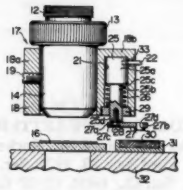
second biasing means positioned around said midsection and coupled to said ramp loading means for normally urging said ramp loading means to a position around said ramp portion at which said two cooperating sections are urged together wherein said probe head means presents the minimum dimension and wherein insertion of said probe head means into said aperture to be inspected compresses said second biasing means and causes said ramp loading means to slide to a position around said ramp portion at which said two sections are urged away from each other wherein said probe head means presents a dimension which corresponds to the inspection dimension of said aperture to be inspected.

4,262,426

MARKER ASSEMBLY FOR USE WITH A MICROSCOPE

Kensaku Miyazaki, Machida, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,610
Claims priority, application Japan, May 16, 1978, 53/66033[U]; May 16, 1978, 53/66034[U]
Int. Cl.³ B41K 1/00
U.S. Cl. 33—189 **36 Claims**



1. A marker assembly for a microscope which includes an objective lens barrel having a lens barrel axis, said marker assembly comprising:

a support member for attachment to the objective lens barrel of the microscope;

a marking piece; and

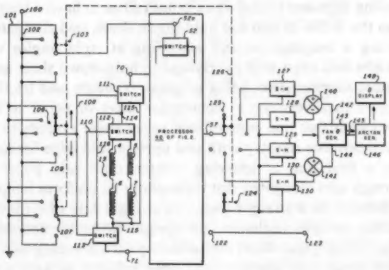
mounting means for mounting said marking piece on said support member for angular movement about a mounting axis extending parallel to the lens barrel axis to move said marking piece in a direction towards the lens barrel axis to a marking position, and to move said marking piece in the opposite direction away from the lens barrel axis to a non-marking position.

4,262,427

FLUX VALVE COMPASS SYSTEM

Michael F. Lynch, Paterson, N.J., and Seymour Levine, Huntington, N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,655
Int. Cl.³ G01C 17/32
U.S. Cl. 33—361 **14 Claims**



1. An improved magnetic compass of the type having magnetic field detector means comprising toroidal core means having excitation coil means and at least a first diametrically opposed pickoff coil means connected in series opposition and forming a first impedance element, wherein the improvement comprises:

triangular wave generator means coupled to said excitation coil means for driving said core means into saturation twice per cycle of said triangular wave,

demodulator means responsive to the unbalance output of said first impedance element in the presence of a first predetermined component of the earth's field for the time

shared manipulation of the output of said pickoff coil means in the same channel,

first integrator means responsive to said demodulator means for generating an integrated output,

network means responsive to said integrator means for coupling said integrated output back to said first impedance element for cancelling said predetermined component of the earth's magnetic field, and

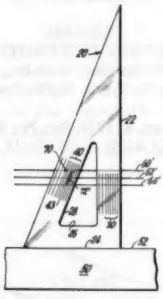
additional utilization means directly responsive to said integrated output.

4,262,428

LETTERING SCALE

Narendrakumar M. Patel, 49 Moraine Rd., Morris Plains, N.J. 07950

Filed Dec. 26, 1979, Ser. No. 106,687
Int. Cl.³ B43L *13/24*
U.S. Cl. 33—477 **8 Claims**



1. A lettering scale for regulating the width of letters and the spacing therebetween, to be used in combination with a straight edge guide, said lettering scale comprising:

a generally planar transparent member having first and second straight edges disposed in perpendicular relationship, and including an open interior area defining a third straight edge, said third straight edge being disposed at an angle relative to said second straight edge;

a plurality of equally spaced, vertical guidelines formed in an array on said member and disposed in parallel relationship to said first straight edge, with the spacing between said first straight edge and the nearest vertical guideline of said array being equal to the spacing between each said vertical guideline of said array; and

a plurality of equally spaced, inclined guidelines formed in an array on said member and disposed in parallel relationship to said third straight edge, with the spacing between said third straight edge and the nearest visible inclined guideline of said array being equal to the spacing between each said inclined guideline of said array, and wherein the spacing between each said vertical guideline is equal to the spacing between each said inclined guideline measured along a line parallel to said second straight edge.

4,262,429

METHOD OF AND APPARATUS FOR DRYING MATERIALS

Arthur C. Avril, P.O. Box 17087, Cincinnati, Ohio 45217

Continuation-in-part of Ser. No. 652,632, Jan. 26, 1976, abandoned. This application Jun. 29, 1979, Ser. No. 53,335
Int. Cl.³ F26B *3/04, 11/04*
U.S. Cl. 34—33 **10 Claims**

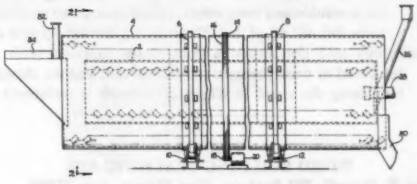
1. A method for forming a dry aggregate mixture comprising the steps of:

moving a stream of a moist fine aggregate through an inner cylinder of two coaxial cylinders, the inner cylinder being within an outer of the cylinders;

heating said fine aggregate by means of heat from a heat source adjacent the end of the inner cylinder into which fine aggregate is introduced to a temperature sufficient to dry said fine aggregate;

mixing the stream of said dry fine aggregate with a stream of a moist coarse aggregate in the outer cylinder of said coaxial cylinders;

moving said mixed stream of said fine aggregate and said



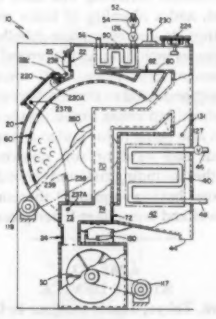
coarse aggregate through said outer cylinder of said coaxial cylinders in a direction opposite to the flow of said fine aggregate in said inner cylinder and moving a gaseous atmosphere through said outer cylinder in a direction opposite the flow of said mixed stream through said outer cylinder whereby said coarse aggregate is dried by the heat exchange between said inner and outer cylinders and between said fine aggregate and said coarse aggregate and the gaseous atmosphere in said outer cylinder, while the temperature of said fine aggregate is lowered substantially.

4,262,430

COMBINATION SOLVENT RECLAIMER AND DRYER

Harry W. Janson, Fairhaven; Jung W. Kim, Westport, and Richard R. Manzone, Fairhaven, all of Mass., assignors to Hoyt Manufacturing Corporation, Westport, Mass.

Filed Nov. 15, 1979, Ser. No. 94,563
Int. Cl.³ F26B *21/06*
U.S. Cl. 34—43 **16 Claims**



1. A solvent reclaiming dryer, comprising:

an endless duct system for transporting a stream of air laden with solvent vapors, said duct system including in its circuit an evaporating chamber, a fan, a heater, and a condenser,

a condenser bypass duct,

a first damper movable between

a bypass position in which the entrance to said condenser is closed and said bypass is open and

a condensing position in which the entrance to said condenser is open and said bypass is closed,

means for pre-heating the air in said endless duct system by

moving said first damper to said bypass position to thereby accelerate heating of said air, and

means for thereafter reclaiming said solvent, said reclaiming means including electrical control means for periodically cycling said first damper from said bypass position to said condensing position,

said control means being operative to move said damper to said bypass position for a bypass time interval long enough to resaturate said air with solvent vapors, and

said control means being operative to move said damper from said bypass condition to said condensing position for a condensing time interval long enough to condense some but not all of the solvent being carried by said air,

whereby said condenser is continually supplied with air saturated or nearly saturated with solvent vapors, thereby increasing the speed at which condensate is reclaimed.

4,262,431

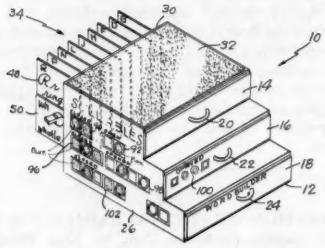
WORD BUILDING TEACHING AID

Eula K. Darnell, 307 Baldwin, West Helena, Ark. 72390

Filed Feb. 13, 1979, Ser. No. 11,865

Int. Cl.[3] G09B *1/30, 17/00*

U.S. Cl. 434—170 **11 Claims**



1. A word building teaching aid, which comprises:

a housing having at least one drawer movable therein, said drawer including a plurality of divided compartments, said compartments including one label for each letter of the alphabet, and a plurality of letter pieces adapted for storage within its corresponding labelled compartment, said letter pieces including sets of vowel letter pieces and sets of consonant letter pieces, said vowel letter pieces in each set being provided in three different colors to represent long, short and other vowel usages, said consonant letter pieces also being color coded to represent breath or voice sounds and hard or soft consonant usages, said housing further including first and second side panels, said first side panel having imprinted thereon the color code for said vowel and consonant letter pieces.

4,262,432

STUDY DEVICE

Fukuji Hachimura, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 102,274

Claims priority, application Japan, Jan. 25, 1979, 54/8649[U]

Int. Cl.[3] G09B *1/06*

U.S. Cl. 434—161 **12 Claims**

1. A study device, comprising:

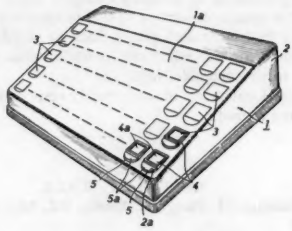
a casing;

a plurality of push-plates rotatably supported by first shafts on said casing;

each said push-plate including an operating portion;

indication plates rotatably supported by second shafts on said casing, said second shafts being arranged substantially behind and parallel to said first shafts;

each said indication plate including at least one indication surface and lying substantially flat on said push-plate; and



at least one resilient member, each of which resiliently supports a plurality of said operating portions of said push-plates.

4,262,433

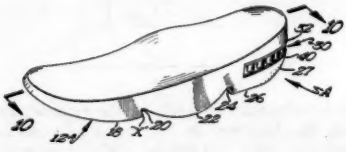
SOLE BODY FOR FOOTWEAR

Vernon A. Hagg, 5245 Heritage Hills Dr., Bloomington, Minn. 55437, and Phillip W. Trask, 18300-32nd Ave. N., Wayzata, Minn. 55391

Filed Aug. 8, 1978, Ser. No. 932,032

Int. Cl.[3] A43B *13/00, 13/18, 21/28*

U.S. Cl. 36—25 R **10 Claims**



1. A sole body for footwear comprising:

(a) a longitudinally extending body,

(b) the bottom of said body having an upturned fore part portion extending rearwardly from the front end of the sole body and terminating in,

(c) a single front groove at the rearmost edge of said fore part portion and extending transversely of and in the bottom thereof.

(d) a rocker portion formed on the bottom of said sole body substantially midway between the front end and the rear end of the sole body and connecting with said front groove and,

(e) a heel formed on the rear part of said sole body,

(f) said rocker portion being arcuate convexly outwardly of said sole body on an axis perpendicular to the longitudinal axis of the sole body and extending outwardly beyond a plane connecting the outermost surface of said fore part portion in alignment with the area of the sole in which the ball area of the foot contacts the sole and said heel, whereby a roll action of the sole body is provided on the rocker portion between the contact of the heel and the ball area of the fore part in the gait of a user.

4,262,434

RUNNING SHOE WITH REPLACEABLE TREAD ELEMENTS

Paul E. Michelotti, 59 Bob Hill Rd., Ridgefield, Conn. 06877

Filed Jul. 30, 1979, Ser. No. 61,631

Int. Cl.[3] A47C *15/00;* **A43B** *5/00*

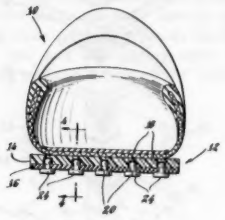
U.S. Cl. 36—67 D **1 Claim**

1. In a running shoe of the type having a flexible elastomeric

sole with a tread pattern thereon formed by a plurality of elastomeric tread elements extending outwardly therefrom, the improvement which comprises:

said sole having a plurality of apertures therein including an enlarged diameter portion spaced inwardly from the surface of said sole;

at least some of said elements being selectively removable from, and engageable with, said apertures in said sole; and



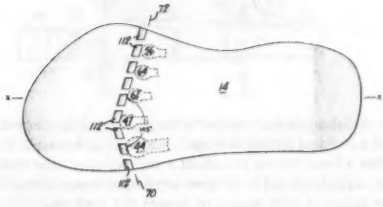
said elastomeric tread elements each having a ground engaging tread disc on a shaft which is insertable into one of said apertures in said sole, and a locking protuberance on said shaft opposite said disc engageable within the enlarged diameter portion of said aperture whereby said tread disc is flush against said sole when said tread element is mounted in an aperture of said sole.

4,262,435

ATHLETIC SHOE

Barry H. Block, 25 Fifth Ave., New York, N.Y. 10003, and Stanley Beekman, 26670 Loganberry Dr., Richmond Heights, Ohio 44143

Filed Apr. 11, 1979, Ser. No. 29,038
Int. Cl.[3] A43B *5/00, 13/14, 13/18*
U.S. Cl. 36—129 **9 Claims**



1. An athletic shoe for a human foot having a metatarsal-phalangal joint line, said shoe comprising:

an elongated solepiece having a ground engaging bottom surface, and an upper surface on which the wearer's foot is received, and

an upper piece secured to said solepiece, said upper piece providing a close embracing foot enclosure having a counter section at the rear of the foot, a mid-body quarter section and a toe box section at the front, the region of the solepiece underlying the juncture of said toe box and mid-body quarter sections constituting a flexure break segment in said solepiece,

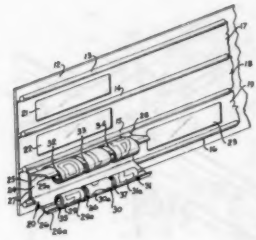
said solepiece having a reduced thickness region defining said break segment and traversing between the medial and lateral side margins of the shoe in a course for underlying and following the metatarsal-phalangal joint line to allow transverse flexure of said solepiece along said joint line.

4,262,436

DISPLAY DEVICE WITH PRICE-CHANGE CARTRIDGES

Joseph Clement, Bradenton, Fla., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 20, 1979, Ser. No. 95,970
Int. Cl.[3] G09F *11/18*
U.S. Cl. 40—518 **7 Claims**



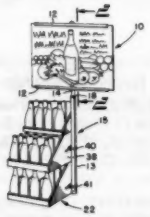
1. A display device comprising a facia (**10**) of translucent material, a cartridge (**20**) attached to the rear surface of said facia and including a carrier, at least one self-coiling information strip (**29**) bearing a series of characters and being mounted on said carrier for slidable adjustment whereby the characters can be sequentially displayed and are observable through the translucent material, and complementary attaching means provided on the rear surface of said facia and on said cartridge for attaching said cartridge to said facia, characterized in that said cartridge comprises a carrier of generally U-shaped cross section including a support surface (**24**) on which an uncoiled portion of said self-coiling strip displays a character, side walls (**25, 26**) extending rearwardly from said support surface, said side walls together with said support surface defining a storage cavity in which the coiled ends of said information strip are accommodated, and resilient legs (**27, 28**) extending from said support surface in a direction opposite to that of said side walls and arranged to engage said attaching means provided on the rear surface of said facia.

4,262,437

DISPLAY AND KIT THEREFOR

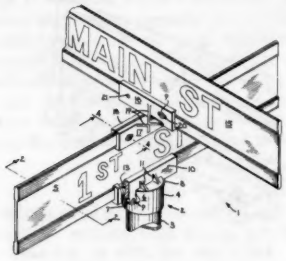
Gerald A. Conway, 3133 Fairfax Rd., Cleveland Heights, Ohio 44118

Filed Nov. 2, 1978, Ser. No. 957,075
Int. Cl.[3] G09F *17/00*
U.S. Cl. 40—604 **9 Claims**



1. A poster display comprising a multiple section telescoping pole, means to secure said pole in an upright position to an adjacent structure, and a poster secured to the top section of the pole, said poster including at least one stiffening rib to hold the same in planar condition, and said means to secure comprising a loop forming strap means adapted to encircle the lower section of the pole and to secure the same to an adjacent structure to hold the pole in said upright position.

4,262,438
STREET SIGN ASSEMBLY
John J. Scherer, New Auburn, Wis., assignor to Safe Lite, Inc., Menomonee Falls, Wis.
Filed Nov. 1, 1978, Ser. No. 956,560
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **14 Claims**



1. A support structure for mounting signs on top of a post, comprising:

first and second signs;

a cap having a base adapted to be fastened to the top of the post;

clamping means associated with said base having a pair of opposing sign gripping faces movable toward one another for receiving and holding a lower margin of said first sign; and

an upper sign holder having a pair of complementary clamp members each having a first clamping jaw disposed crosswise to a second clamping jaw, said clamp members being disposed in reversed positions with respect to one another to have each jaw of each clamp member facing a jaw of the other clamp member, and said clamp members movable toward one another with a first set of jaws receiving and holding the upper margin of said first sign and a second set of jaws receiving and holding a lower margin of said second sign crosswise to the first sign.

4,262,439
DISPLAY STAND
James M. Dinan, Irvington, N.Y., and Frank De Nigris, Parsippany, N.J., assignors to Dinaco, Inc., Irvington, N.Y.
Filed May 21, 1979, Ser. No. 40,650
Int. Cl.³ G09F *7/20*
U.S. Cl. 40—607 **10 Claims**

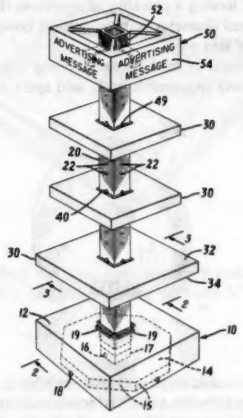
1. An article display system comprising

a post having a plurality of openings therein angularly spaced around the periphery of said post at a predetermined position along its length,

means for supporting said post in an upright position,

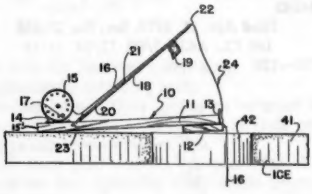
a shelf having an article supporting surface and an opening therethrough dimensioned and shaped to fit freely around said post,

wedge means for mounting said shelf on said post, said wedge means including a plurality of wedge members each having a lug extending from one surface thereof, said lug adapted to be inserted into one of said openings in said post to releasably secure said wedge members to said post,



said wedge means adapted to snugly engage said shelf within said opening to support said shelf firmly on said post.

4,262,440
FISHING RIG
Amil Sagal, P.O. Box 1357, Moose Jaw, Saskatchewan, Canada
Filed Sep. 24, 1979, Ser. No. 78,228
Claims priority, application Canada, Oct. 13, 1978, 313376
Int. Cl.³ A01K *97/01*
U.S. Cl. 43—16 **3 Claims**



1. A fishing device for ice fishing and the like adapted for use with a reel and fishing line upon said reel; comprising in combination a base, means to mount a reel adjacent one end of said base, a resilient rod section secured by one end thereof to said base adjacent said means to mount the reel, said rod section being movable from a "set" position to a "release" position and vice versa, line guiding means on said rod section, said rod section, when in the released position extending upwardly and forwardly towards the other end of said base, and trigger means adjacent the other end of said base to hold said rod section in a bowed "set" position, said trigger means including a release lever operatively connected to the line to release said trigger means when a predetermined tension is applied to the distal end of said line, said trigger means including a fixed plate on the end of said base, means on said plate to detachably receive said rod section adjacent the distal end of said rod section, when said rod section is in the "set" position, the tension of said rod section when in the "set" position retaining said rod section within said means on said plate, said plate including a mounting portion, and a hooked upper end formed thereon, said hooked upper end including a substantially vertical portion and an offstanding portion, said plate being situated perpendicular to the longitudinal axis of said rod section, said

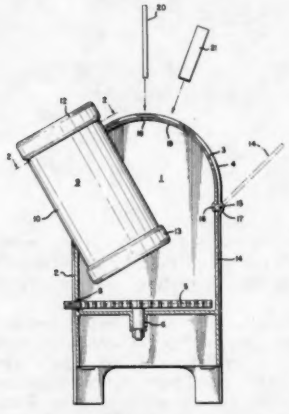
rod section engaging under said hooked upper end, said release lever comprising a substantially right angled plate having a substantially vertical portion and an upper portion extending at right angles from the upper end of said vertical portion, said release lever being freely pivoted by the distal end of said upper portion, to said offstanding portion of said plate adjacent the distal end thereof whereby said vertical portion of said release lever normally engages the side of said rod section engaging under said hooked upper end and means on said base to guide said line whereby tension on the distal end of said line pulls said release lever sideways against said rod section thereby moving same sideways towards the distal end of said hooked upper end and disengaging same from said plate thereby releasing said rod section to the "release" position.

4,262,441

MAGIC MAILBOX

Tobin Wolf, 285 Ayerigg Ave., Passaic, N.J. 07055

Filed Feb. 12, 1979, Ser. No. 11,523
Int. Cl.³ A63H *33/00*; G02B *27/08*
U.S. Cl. 46—1 R **4 Claims**



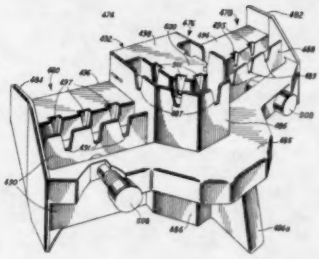
1. A toy mailbox which comprises in combination
(a) a container having front, rear, side, bottom and top portions,
(b) a platform secured to the bottom of said container and rotatable therein,
(c) means comprising plural slots of different cross-sectional dimensions formed in said top portion of said container for entry into said container of objects of predetermined shape and dimensions, said slots being fully disposed above said platform,
(d) a transparent region on a wall of said container for transmitting light onto said platform, and
(e) a kaleidoscope passing through a wall of said container and secured thereto, said kaleidoscope having a pair of end portions, one of said end portions being within said container directed toward said platform and the other end portion extending externally of said container and having a viewing aperture therein, said transparent region comprising a door in said rear portion rotatably secured in said container and disposed adjacent said platform, said door movably closing an opening of a size and shape to permit removal of said objects.

4,262,442

CASTLE AND VILLAGE MAKING TOY

Robert Mansfield, 224 Woodlawn Terrace, Collingswood, N.J. 08108

Filed Mar. 2, 1978, Ser. No. 882,878
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—16 **9 Claims**



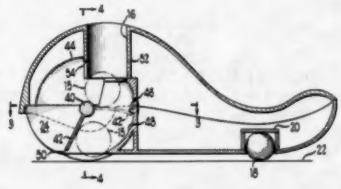
1. A mold for making castles sections in damp sand, said castles sections having towers, banquettes, parapets and crenelles, said molding comprising:
(a) tower means for forming the walls, banquette and parapets of said towers; said tower means further comprising a tower wall portion having a plurality of spaced apart slots and a tower banquette insert having a plurality of spaced apart grooves in alignment with said slots; and
(b) side battlement means for forming side banquettes and parapets adjacent to said towers.

4,262,443

POP-UP WHALE

Michael J. Ferris, Chicago; Palmer J. Schoenfield, Evanston, and Burton C. Meyer, Downers Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,886
Int. Cl.³ A63H *11/10*
U.S. Cl. 46—103 **4 Claims**



1. A toy vehicle adapted to simulate a geysering expulsion of water by a whale, comprising:
a generally enclosed housing generally in the shape of a whale having an upper side and a lower side, said lower side having a projectile receiving aperture and said upper side having a projectile expelling aperture;
at least three wheels rotatably extending out from said lower side of said housing;
a flexible impeller operatively connected for rotation by one of said wheels;
a projectile receiving channel disposed within said housing communicating with said projectile receiving aperture and adapted to receive a projectile when said channel overlies said projectile;
a projectile launching channel extending generally vertically within said housing in communication with said projectile expelling aperture;
a projectile launching station disposed within said housing

and communicating with both said receiving and said launching channels, said impeller rotatably mounted within said station to convey a projectile from said receiving channel to said launching channel; and

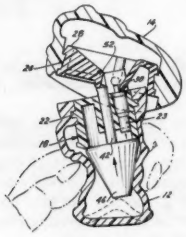
means within said station located along the path of rotation of said impeller for flexing said impeller to propel said projectile by spring action through said launching channel and out said projectile expelling aperture upwardly over said housing.

4,262,444

BIG MOUTH DOLL

Julius Cooper, New Hyde Park, and Burt W. Ensmann, Flushing, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed May 29, 1979, Ser. No. 43,869
Int. Cl.[3] A63H *11/00*
U.S. Cl. 46—119 **16 Claims**



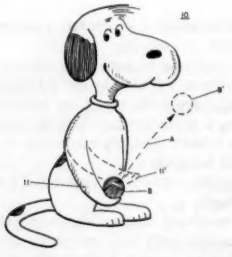
1. A toy doll comprising a flexible body, a head portion and means in said body and head portion for pivoting said head portion with respect to said body when the body is squeezed; said body including an upper portion shaped to define the lower portion of the doll's mouth and said head portion defining the upper portion of the doll's mouth whereby said pivotal movement of the head portion simulates opening of the doll's mouth; said means including a body block fixed in said upper end of said flexible body, a head block fixed in said head portion and means directly pivotally connecting said head and body blocks.

4,262,445

CONTROLLABLE RESPONSE SYSTEMS

Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044

Filed Feb. 12, 1979, Ser. No. 11,488
Int. Cl.[3] A63H *13/16*
U.S. Cl. 46—145 **6 Claims**



1. A delayed response toy comprising

a movable appendage for said toy,

a rotatable shaft within said toy fixed to said appendage,

a suction cup fixed to said shaft,

a spring encircling said shaft and having one end thereof fixed to said shaft and the other end thereof fixed within said toy,

a cantilever affixed to said shaft and extending to said suction cup,

a plate within said toy pivotally hinged below said shaft, said plate being spring loaded and positioned to face said suction cup,

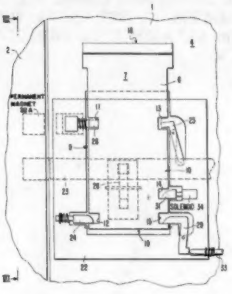
whereby rotation of said appendage causes rotation of said cantilever and suction cup attached thereto to make initial contact with said plate which yields and assures suitable suctional engagement with said suction cup during the further rotation of said appendage, after which the suction cup becomes spontaneously disengaged from said plate after a prescribed interval of time.

4,262,446

HOUSEHOLD SECURITY DEVICE

William J. Price, 8 Kingfield St., London E.14 9DD, England

Filed Jan. 31, 1979, Ser. No. 8,000
Int. Cl.[3] E05B *65/00*
U.S. Cl. 49—35 **6 Claims**



1. A household security device for a door movably mounted in a door jamb, the door having a slot formed therethrough, an inside surface and an outside surface, said security device comprising

a container of generally rectangular parallelepiped configuration having a pair of spaced substantially planar parallel surfaces each of substantially rectangular configuration with a pair of spaced parallel length edges each having spaced indentations formed therein, one of said surfaces having a slot formed therein, said container having a pair of length sides perpendicular to the surfaces and joining the corresponding edges of said surfaces with indentations formed therein in correspondence with the indentations formed in said edges, and a pair of width sides perpendicular to the surfaces, said container having a chamber therein for accommodating an identification item;

a receptacle mounted on the inside surface of the door in proximity with the slot formed through said door for accommodating the container;

a door bolt extending through the door for releasably securing said door in the door jamb, said door bolt having indentations therein; and

securing means in the receptacle and the door for permitting a person in an area enclosed by said door to inspect and secure a photographic identification item of a visitor, after visual comparison, before unlocking said door, said securing means functioning when said door is closed and locked, with the visitor outside the door and the person in the enclosed area working in conjunction with each other to release and return the identification item, said visitor placing said identification item in said container outside said door and said container being drawn through said slot

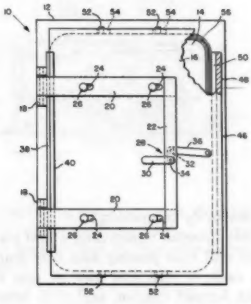
through said door by said person and placed in said receptacle.

4,262,447

DOUBLE ACTING HINGED PRESSURE VESSEL CLOSURE

Michael L. Schneier, Pittsford, and Henry B. Peters, Webster, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Aug. 20, 1979, Ser. No. 67,608
Int. Cl.³ E05D *15/58*
U.S. Cl. 49—254 **7 Claims**



1. A closure for the load opening of a sterilizer or like pressure vessel comprising:

(a) hinge members fixed to said vessel adjacent said opening for swinging movement about a vertical axis;

(b) a door member for said opening;

(c) means for slidably supporting said door member of said hinge members including a pin carried by one of said members and extending through an elongated slot formed in the other of said members;

(d) mechanical advantage means operatively connected between said door member and vessel for sliding said door with respect to said hinge members between a first and a second position; and

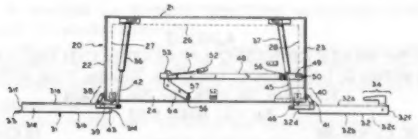
(e) flanges on said door member and vessel cooperating for engagement upon sliding movement of said door member to said second position.

4,262,448

SAFETY STORAGE CABINET

Frank S. Flider, Mattoon, Ill., assignor to Justrite Manufacturing Company, Mattoon, Ill.

Filed Jun. 20, 1979, Ser. No. 50,465
Int. Cl.³ E05C *7/05*
U.S. Cl. 49—367 **11 Claims**



1. A door closure mechanism for a cabinet, said cabinet of the type having a top, a bottom, sides, a back, and a front, said closure mechanism adapted to close off said cabinet front, said closure mechanism comprising:

a first door hinged to said cabinet front proximate one said side;

a second door hinged to said cabinet front proximate the remaining of said sides;

closing means to urge said first and second doors to a closed position;

means mounted to the interior of said cabinet to time the closing of said doors,

said timing means including an actuating bracket pivotally attached interiorly to said cabinet top;

a slide bar pivotally attached to said actuating bracket,

said slide bar being held by a spring in a first position,

said slide bar moveable to a second position when said actuating bracket is pivoted;

means on at least said first door to extend toward said slide bar as said door is closing;

means on said slide bar to engage said extension means to hold said first door in a partially open position,

said engaging means being defeated when said second door closes to contact said actuating bracket;

means to latch said doors in a closed position responsive to the closing of said doors; and

means to prop said doors in an open position,

said prop means including link means pivotally mounted to each said door,

said link means having a first unextended position and a second extended position,

said link means being spring biased to remain normally in said first position, and

means to engage said link to said cabinet when said link is in said second position,

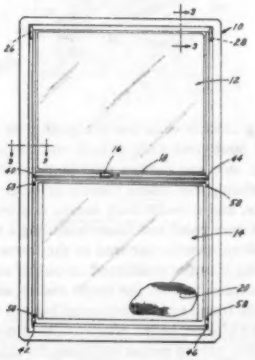
said link being fashioned from heat-fusible material whereby a selected rise in ambient temperature will fuse said link thereby releasing one said door from its open position and enabling said door to close.

4,262,449

ALUMINUM HUNG WINDOW AND TAKEOUT MECHANISM THEREFOR

Harry M. Riegelman, Diamond Bar, and Vernon E. Madison, Orange, both of Calif., assignors to Rusco Industries, Inc., Los Angeles, Calif.

Filed Sep. 14, 1979, Ser. No. 75,794
Int. Cl.³ E05D *15/16*
U.S. Cl. 49—404 **4 Claims**



1. A metal window structure comprising:

a vertical frame having jambs for a sash;

a sash having stiles extending into said jambs;

a plastic member attached at each corner of each stile, each plastic member having a portion located between the stile and adjacent jamb to form a spacer preventing metal-to-metal contact between jamb and stile, each plastic member having a housing portion;

a respective button element located in each housing portion and extending through one wall thereof,

a compression spring located in each housing portion and

extending between the button and the opposing wall thereof,

and said stiles having openings aligned with the buttons of said housing portions,

said springs normally biasing said buttons so they extend through said stile openings,

said buttons as extended being in interference relation with the adjacent jambs to prevent lateral movement of the sash for takeout purposes.

4,262,450

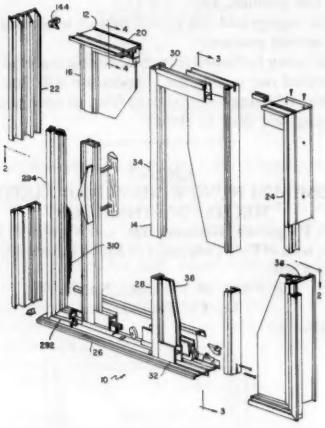
BUILDING STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.

Continuation-in-part of Ser. No. 219,330, Jan. 20, 1972, Pat. No. 3,854,245. This application Mar. 12, 1973, Ser. No. 340,556

Int. Cl.[3] E05D *13/02, 13/04*

U.S. Cl. 49—425 **2 Claims**



1. Sliding closure structure comprising an outer frame having a head, jambs and a sill, at least one movable closure panel having top, side and bottom rails in assembly with the outer frame for sliding movement therein between the jambs of the outer frame, and prowler lock means connected between the movable closure panel and frame including a retaining member for the locking member secured to the frame head member, a loose locking member positioned on one of and operably positionable between both of the frame and closure panel so as to abut both the frame and closure panel but not fastened to either the frame or closure panel, which locking member is an elongated member having means engaging the retaining member at one end thereof to permit pivoting of the locking member into an abutting position with regard to the closure panel in one relative position of the locking member and the retaining member, and means operably associated with the locking member for moving the locking member into a storage position wherein the closure member is permitted free sliding movement in the frame and a locking position wherein the closure member is fixed in at least one position, and spring means for securing the locking member between the retaining member and the frame head member in a second pivoted position thereof wherein the locking member will not engage the closure panel as it is moved within the frame.

4,262,451

ROLLER ASSEMBLY FOR A SLIDING FRAME CLOSURE

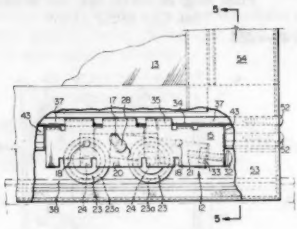
Raymond Dallaire, P.O. Box 220 Levis, Que., Canada assignor to P.H.-Tech, Inc., Levis, Quebec, Canada

Filed Apr. 27, 1979, Ser. No. 33,848

Claims priority, application Canada, Mar. 16, 1979, 323602

Int. Cl.[3] E05D *13/02*

U.S. Cl. 49—425 **7 Claims**



1. A roller assembly comprising:

an outer frame member comprising a first pair of side walls and a first end wall joining said first pair of side walls together, each of said first pair of side walls having a canted slot formed therein, said slots being correspondingly positioned in their respective side walls;

an inner frame member within said outer frame member, comprising a first section and a second section, said first section comprising a second pair of parallel side walls and a pair of roller wheels mounted thereon in tandem for rotation about their respective axes, said second section comprising a third pair of side walls and a second end wall joining them together, said third pair of side walls of said second section receiving overlapping portions of said second pair of side walls of said first section;

a transverse pin extending through said third pair of side walls and said overlapping portions of said second pair of side walls and into said slots, for joining together said first and second sections of said inner frame member and for mounting said inner frame member in a position within said outer frame member which is adjustable inwardly and outwardly with respect to said outer frame member by diagonal sliding motion of said pin in said slots; and

adjustment means securing said first end wall of said outer frame member to said second end wall of said second section so that upon tightening of said adjustment means said end wall of said second section moves toward said first end wall of said outer frame member and said transverse pin slides down said canted slots, moving said roller wheels downwardly, and upon loosening of said adjustment means said roller wheels are moved upwardly.

4,262,452

DISC BRAKE GRINDING APPARATUS AND METHOD

Francisco R. Lopez, 406 E. California, Arcadia, Calif. 91006

Filed Nov. 24, 1978, Ser. No. 963,434

Int. Cl.[2] B24B *5/02*

U.S. Cl. 51—89 **19 Claims**

1. In apparatus to grind a disc brake disc, the combination comprising:

(a) a pair of rotors, at least one of which is a grinding rotor,

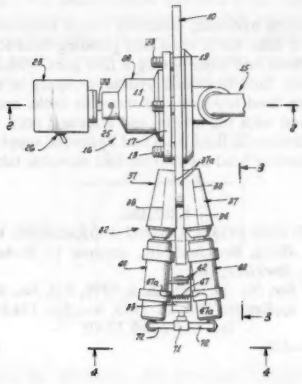
(b) means mounting the rotors to extend in spaced relation at opposite sides of a brake disc for grinding at least one such side, and for relative movement of at least one rotor toward and away from the disc,

(c) drive means to rotate at least one of said rotors,

(d) yieldable means operable to urge said rotors relatively toward one another,

(e) actuator means to initially urge the rotors relatively away from one another, and

(f) control means operatively connected to said actuator



means and said drive means to cause the actuator means to allow said yieldable means to displace the rotors relatively toward one another and to then effect operation of said drive means.

4,262,453

MACHINE FOR GRINDING HARD WORKPIECES

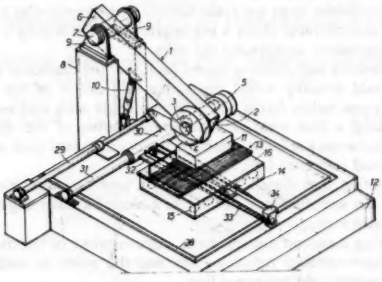
Georges Parigot, Althen des Paluds, and Jean-Louis Passerat, Montfavet, both of France, assignors to Societe Europeenne des Produits Refractaires, Neuilly-sur-Seine, France

Filed Jan. 8, 1979, Ser. No. 1,746

Claims priority, application France, Jan. 9, 1978, 78 00404

Int. Cl.³ B24B *7/02*

U.S. Cl. 51—93 **5 Claims**



1. A machine for grinding large hard workpieces, with reduced vibrations, comprising:

an arm pivotally mounted on a support for swinging up and down in a vertical plane from a highest position to a lowest position, the arm being equipped at one end with a grinding tool;

means for raising and lowering the arm comprising a hydraulic system preventing an excessive downward force on the grinding wheel and allowing an automatic return to the highest position of the grinding wheel when released, the hydraulic system including a double-effect hydraulic jack connected between the arm and the support and having first and second aligned cylinder chambers containing first and second pistons, both cylinders having inlets for hydraulic fluid at each of the ends thereof, the piston rods of the first and second pistons being respectively connected to the arm and to the support, a first constant-pressure hydraulic circuit for feeding hydraulic fluid to one portion of the first chamber for raising the arm, a second higher pressure hydraulic circuit for feeding hydraulic fluid to the other portion of the first chamber, a third hydraulic circuit for feeding hydraulic fluid, at a pressure corresponding to the highest permissible load applied to the grinding tool, to one portion of the second chamber for raising the arm, a fourth hydraulic circuit for feeding hydraulic fluid to the other portion of the second chamber at a pressure which is lower than the pressure in the third circuit but is sufficient for compensating the weight of the arm, the fourth circuit containing a constricted orifice upstream of the inlet to the other portion of the second chamber, hydraulically controlled valves upstream of the inlets to the first cylinder chamber, a distributor for controlling the valves, control means for the distributor and the valves;

manual means and a hydraulic device sensitive to reaction force of the grinding tool on the workpiece, the manual means being hydraulically connected to the raising and lowering means, and the hydraulic device being positioned upstream of the valve in the second circuit;

a table on which the workpiece is mounted, the table being supported on hydraulic flotation feet to which a stream of cutting liquid is supplied;

a concrete machine base on which the table is mounted to be mobile thereon; and

means for moving the table in two directions on the machine base.

4,262,454

WORKPIECE ROTATIONAL SPEED CONTROLLER FOR CAM GRINDING MACHINE

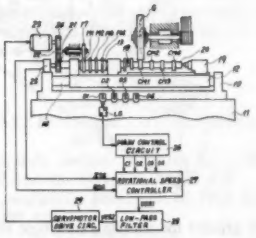
Wataru Iida, Aichi; Toshio Tsujiuchi, Anjou, and Shintaro Ishikawa, Okazaki, all of Japan, assignors to Toyoda-Koki Kabushiki-Kaisha, Kariya, Japan

Filed Jun. 1, 1979, Ser. No. 44,654

Claims priority, application Japan, Jun. 20, 1978, 53-74382

Int. Cl.³ B24B *19/12*

U.S. Cl. 51—97 NC **6 Claims**



1. A workpiece rotational speed controller in a cam grinding machine having workpiece support means for rotatably supporting a cam shaft to be ground, a rocking mechanism for pivotally moving said workpiece support means about a pivot axis parallel to the axis of said cam shaft, and a servomotor for rotating said cam shaft and driving said rocking mechanism in synchronism with the rotation of said cam shaft, said controller comprising:

a pulse generator for generating a pulse signal each time of a unit angle rotation of said cam shaft;

a pulse counter for detecting the rotational angular position of said cam shaft by counting said pulse signal supplied from said pulse generator;

a plurality of digital setting elements each for digitally set-

ting an angular position where the rotational speed of said cam shaft is to be changed;

a comparator for comparing a count value of said pulse counter with any of set values set respectively in said plurality of said setting elements and for emitting a coincidence signal upon the coincidence therebetween;

a region detection counter connected to said comparator for counting a coincidence signal supplied from said comparator;

gate circuit means responsive to said count value of said region detection counter for selectively applying said set values of said plurality of said setting elements to said comparator;

a plurality of adjustable command voltage generating elements for generating various command voltages;

command voltage selecting means connected to said region detection counter for selecting one of said command voltages from said command voltage generating elements in correspondence to a count value of said region detection counter; and

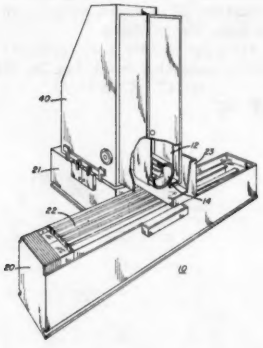
command voltage smoothing means connected between said command voltage selecting means and said servomotor for converting a rapid change of a selected command voltage output from said command voltage selecting means into a gradual change and applying a smoothed command voltage to said servomotor.

4,262,455

HEAD POSITIONING FOR A BELT GRINDER

Richard Rettew, Newmanstown, Pa., assignor to Contraves Goerz Corporation, Pittsburgh, Pa.

Filed Aug. 24, 1978, Ser. No. 936,621
Int. Cl.³ B24B *21/00*
U.S. Cl. 51—142 **15 Claims**



1. A belt grinder for grinding an article comprising:

a vertical column which is continuously movable back and forth along fixed guides while grinding the article;

a grinding head which is movable as a unit and which comprises:

an upper slide supported from said vertical column for independent sliding movement;

a lower slide spaced apart from said upper slide and supported from said vertical column for independent sliding movement;

an idler pulley supported from said upper slide;

a driven pulley supported from said lower slide;

a coated abrasive belt disposed around said idler pulley and said driven pulley;

biasing means comprising a pneumatic cylinder disposed between said upper slide and said lower slide for providing opposed biasing forces on said upper slide and said lower slide apart to provide tension on said coated abrasive belt; and

a drive motor for driving said driven pulley;

a movable table disposed beneath said grinding head for receiving the article to be ground;

a hydraulic supply for supplying pressurized hydraulic fluid; and,

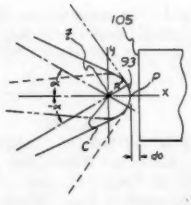
double acting hydraulic actuating means connected to said grinding head for moving said grinding head toward and away from said table having a first port, which receives hydraulic fluid from said hydraulic supply to move said grinding head towards said movable table, and into engagement with the article, and a second port, which receives hydraulic fluid from said hydraulic supply to move said grinding head away from said movable table.

4,262,456

METHOD FOR POSITIONING A DRESSING WHEEL

Edward W. Haug, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Division of Ser. No. 10,766, Feb. 9, 1979, Pat. No. 4,228,781.
This application Feb. 26, 1980, Ser. No. 124,874
Int. Cl.³ B24B *53/06*
U.S. Cl. 51—325 **11 Claims**



1. A method for accurately positioning a dressing wheel in a dressing wheel fixture of a grinding wheel dressing machine such that the center of the transverse radius of the circumferential apex of the dressing wheel at the point of contact with the surface being dressed lies substantially on a dressing axis perpendicular to an x-y plane formed by perpendicular x and y axes and movable along a predetermined path during a dressing operation, comprising the steps of:

orienting said dressing wheel such that the diametral axis of said dressing wheel containing said center of the transverse radius forms a first known angle with said x-axis;

taking a first measurement representative of the distance between a reference line and the point on said apex nearest said reference line;

rotating said dressing wheel about said dressing axis such that said diametral axis forms a second known angle with said x-axis;

taking a second measurement representative of the distance between said reference line and the point on said apex nearest said reference line;

comparing said first and second measurements to determine the amount by which said center is offset from one of said x-axis and said y-axis in a direction parallel to the other of said x-axis and said y-axis.

4,262,457

PNEUMATIC STRUCTURES

Robert M. Darmstadt, and Robert W. Darmstadt, both of 263 D. S. Tenth Ave., Highland Park, N.J. 08904

Filed Sep. 12, 1978, Ser. No. 941,599
Int. Cl.³ E04B *1/345*
U.S. Cl. 52—2 **9 Claims**

1. A pneumatic structure, which comprises:

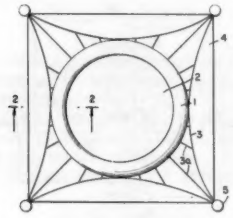
(a) a pneumatic compression ring;

(b) a plurality of substantially vertical columns disposed about said pneumatic compression ring;

(c) cable means for supporting said pneumatic compression

ring, said cable means being suspended from said columns and connected to said pneumatic compression ring to dispose said ring in a substantially horizontal plane;

(d) a top cover under tension attached to the upper portion of said pneumatic compression ring and closing the central inner opening of said ring and a lower membrane attached to the lower portion of said pneumatic compression ring to close the lower opening of said ring;



(e) means for stiffening said structure connected to said columns at points below said pneumatic compression ring and extending to said ring; and

(f) said top cover and said lower membrane being frustoconical and extending away from said pneumatic compression ring, and a column means is provided between said top cover and said lower membrane.

4,262,458

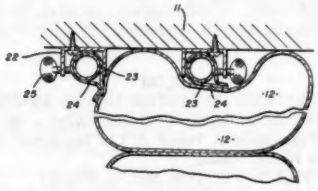
DEVICE FOR MOUNTING AN INFLATABLE DOCK SEAL

Larry O'Neal, 4953 Timbercrest Drive, Canfield, Ohio 44406

Filed Mar. 5, 1979, Ser. No. 17,595

Int. Cl.³ E04B *1/34*

U.S. Cl. 52—2 **2 Claims**



1. An inflatable dock seal and mounting therefor for positioning said dock seal on a wall about a dock opening therein and comprising at least one inflatable member arranged in a continuous semi-circular shape and having an upper horizontal section, a pair of spaced side sections and a lower horizontal section, flexible non-inflatable longitudinally positioned tubular fastening members on the exterior of at least one of said sections, rigid elongated structural members slidably positioned in said fastening members, a plurality of clamps comprising C-shaped devices having movable members extendible into the area of said C-shape and fasteners securing said clamps to said wall adjacent said dock opening and arranged for detachable engagement with said elongated structural members and means for inflating said inflatable members.

4,262,459

ROOF GUTTER

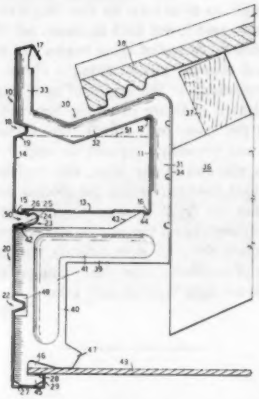
Dennis M. Hallam, Zillmere, Australia, assignor to E. Sachs & Co. Ltd., Zillmere, Australia

Filed Jan. 18, 1979, Ser. No. 4,525

Claims priority, application Australia, Jan. 19, 1978, PD3080

Int. Cl.³ E04D *13/04, 13/15*

U.S. Cl. 52—11 **3 Claims**



1. A channel-shaped roof gutter having substantially vertical front and back flanges, and a bottom wall interconnecting said flanges, said front flange including a hooked support flange at its upper end, a single longitudinal groove formed in said front flange approximately intermediate the height thereof, said groove having rearwardly convergent top and bottom faces, said bottom face being below the top of the back flange of said gutter and having overflow ports formed therein, said front flange comprising coplanar portions above and below said longitudinal groove, a locking bead formed at the juncture of said back flange and said bottom wall and extending downwardly from said bottom wall, a top return flange formed at the upper end of said back flange, and a downwardly extending bead formed at the juncture of the lower coplanar portion of said front flange and said bottom wall.

4,262,460

MOVABLE AND EXTENSIBLE COVERING FOR LARGE SPANS

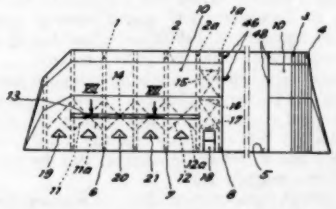
Elio Bertin, Milan, Italy, assignor to Flexco S.r.1., Milan, Italy

Filed Apr. 12, 1979, Ser. No. 29,275

Claims priority, application Italy, Apr. 13, 1978, 22256 A/78; Dec. 11, 1978, 30703 A/78

Int. Cl.³ E04B *1/346*

U.S. Cl. 52—64 **10 Claims**



1. A shed of the extensible type, having arches movable on rails and supporting a flexible cover, characterized in that:

said arches are self-sustaining and are made up of modular elements, adjacent ones of said arches are connected to-

gether in a single group by means of diagonal elements hinged so as to form parallelograms with pantograph movement that keep the arches spaced and vertical during the opening and closing of the shed, said shed is opened with movement of the arches in a single direction and closed with movement in the opposite direction, one end of the shed is fixed to the ground and the other end is movable on rails as a carriage;

the ends of the extensible shed each have at least one arch of lower height so as to form an apse shape that closes each of said ends, said lower arch is connected to the adjacent sliding arch by means of cross beams and by at least one transversal element placed along a chord of the lower arch substantially at the height of said hinged parallelograms, slanted rods are provided between the adjacent arch and the lower arch suitable for stiffening the arch complex and providing support for and fastening of the canvas at the end of the shed, said canvas is stretched between said lower arch and the ground; and

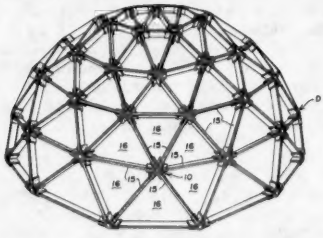
folding means are fixed to each hinged parallelogram for acting horizontally on the canvas adjacent said parallelograms to fold the canvas in bellows fashion toward the outer side of the shed during the opening of the shed when the arches are approaching each other.

4,262,461

GEODESIC DOME CONNECTOR

Janet B. Johnson, and Dennis O. Johnson, both of Route #3, Box 105-D, North Branch, Minn. 55056

Filed Apr. 9, 1979, Ser. No. 28,573
Int. Cl.³ E04B *1/32, 1/40*
U.S. Cl. 52—81 **11 Claims**



1. A geodesic dome triangular panel area roof connector member for interconnecting joists defining such an area comprising:

(a) a junction point member comprising a generally cylindrical sleeve member having rigid wall structure and a plurality of circumferentially spaced openings extending radially through said wall structure, and having an axis defining the apex of the triangular panel area;

(b) a joist element defining a side of the triangular panel area;

(c) a rigid open generally U-shaped tongue member carried by one end portion of said joist element and extending longitudially outwardly therefrom and radially inwardly through one of said sleeve openings into the interior of said sleeve member, and

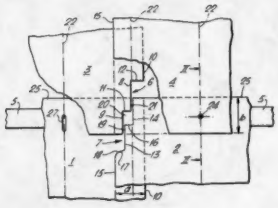
(d) an interlock member constructed and arranged to engage and fixedly interlock with the portion of said tongue member extending through said opening into the confines of said sleeve member, to thereby interlock said tongue member and said joist element in fixed relation to the exterior of said sleeve member.

4,262,462

ARRANGEMENT IN ROOFING TILES

Arnulf Melbye, Eiksmarka, Norway, assignor to A/S Norcem, Slemmestad, Norway

Filed Dec. 21, 1978, Ser. No. 971,859
Claims priority, application Norway, Jan. 4, 1978, 780034
Int. Cl.³ E04D *1/04, 3/361*
U.S. Cl. 52—98 **7 Claims**



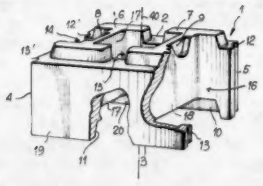
1. An improvement in roofing comprising generally rectangular, self-supporting, corrugated roofing tiles or panels mounted in horizontal rows or courses on supporting purlins, each tile being positioned with the wave crests of the corrugations extending parallel to the line of fall of the roof and with a lateral overlap with respect to the adjacent tile or tiles in the row to form lateral overlap areas, said lateral overlap areas being aligned with the lateral overlap areas of the other rows, each row being positioned with a horizontal overlap with respect to the adjacent row or rows to form horizontal overlap areas, said lateral and horizontal overlap areas forming crossings where the corners of four tiles meet, at least some of the tiles being provided with mating cut-puts at two diagonally opposite corners so that the two middle, diagonally adjoining tiles of each crossing are positioned edgewise in non-overlapping position, the edges of the mating cut-outs forming a channel therebetween, the shape of the tiles including the cut-outs allowing a variation of the horizontal overlap, said improvement comprising that each cut-out is defined by at least two first edge portions which are parallel to the wave crests and second edge portions connecting said first edge portions with each other and with the side edge of the tile and extending transversely to the wave crests, the adjacent first edge portions of adjacent tiles forming narrow passages in said channel separated by a wider channel portion defined between said second edge portions and serving as an expansion chamber, whereby the horizontal overlap of the rows may be increased without adversely affecting the sealing produced by the roofing.

4,262,463

PRESSED BLOCKS FOR INTERLOCKED ASSEMBLY

Joseph Hapel, Seine Maritime, France, assignor to Bureau d'Etudes Techniques J. Hapel & Cie Ingenieurs Conseils Chillou, Le Havre, France

Filed Dec. 27, 1978, Ser. No. 973,557
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—98 **12 Claims**



1. A block comprising opposite first and second faces and adapted for use in construction, said block further comprising

at least one male and at least one female assembly means for interlocking a plurality of said blocks wherein:

(a) said at least one male assembly means protrudes above said first face and has a vertical section extending between two substantially horizontal sections arranged at the ends of said vertical section, said male assembly means having an "I" configuration, a portion of said vertical section extending downwardly below said first face; and

(b) said at least one female assembly means is arranged on said second face and has a generally rectangular cross-section.

4,262,464

WALL FACING ASSEMBLY

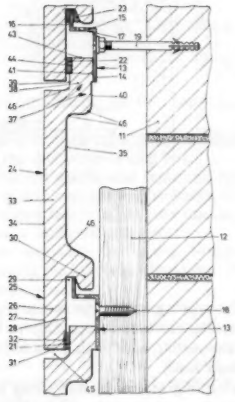
Michael C. Ludowici, 5-7 Josef-Wiesberger Str., D-8013 Haar, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,509

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717798; Dec. 15, 1977, 2756062; Dec. 15, 1977, 2756063; Dec. 27, 1977, 2758286; Mar. 8, 1978, 2810039; Mar. 20, 1978, 2812223

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—510 **28 Claims**



1. A ventilated wall facing assembly comprising:

a plurality of ceramic facing panels each comprising a back side and a substantially planar front side, top and bottom ribs, the back side for facing in the direction of a wall onto which the panel may be secured, the top rib being offset from the front side in a direction toward such securing wall to receive the bottom rib of one of said panels located thereabove, a mounting rib extending from the back side, a mounting groove formed between the bottom rib and the mounting rib, the panel comprising a substantially uniform cross section along the entire length thereof from the top rib to the bottom rib, the top rib and mounting rib offset from the back side toward such wall to provide a hollow ventilating space between the back side and such wall, the panels having lateral end surfaces and a main portion defined between the top and bottom ribs, said assembly having reentrant corners, each reentrant corner formed by two facing panels abutting in right angle relationship, one of said two facing panels, forming a reentrant corner, having a cutout formed by the removal by linear cut of the bottom rib and main portion of a panel, said cutout being adjacent to the front side of the other panel forming such reentrant corner, said assembly having projecting corners, each projecting corner formed by two facing panels abutting in right angle relationship, one of said two panels forming a projecting corner having a cutout formed, by the removal, as by linear cut, of the top rib and mounting rib of a panel, the cutout being adjacent to the lateral end surface of the other panel forming such projecting corner; and

suspension means for each said panel for mounting on such wall, each said suspension means being adapted for loose engagement with the mounting groove of the corresponding panel and for extending between the top rib of a lower one of said panels and such wall, the bottom rib of the corresponding panel being adapted for maintaining the top rib of a lower one of said panels in pressure contact with the suspension means.

4,262,465

MOUNTED DEVICE FOR PANEL ELEMENTS, ESPECIALLY FOR BUILDINGS OR THE LIKE

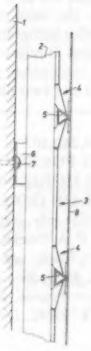
Olof H. Öbrink, Promenaden 2, S-136 00 Kungsör, Sweden

Filed Jun. 15, 1979, Ser. No. 48,945

Claims priority, application Sweden, Jun. 20, 1978, 7807057

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—510 **8 Claims**



1. A mounting device for panel elements, especially for buildings, and comprising:

at least two spaced, substantially parallel mounting bars, which are mounted on the surface to be covered by the panel elements and which are arranged to carry at least one retaining member each, and mounting ribs which are connected to the panel elements and cooperate with the retaining members, said mounting ribs preferably extending across the panel elements and being arranged at an angle relative to the mounting bars and having a cross section enabling the retaining members to cooperate with any portion of the mounting rib to retain the same, characterized in that the retaining members are locked against movement perpendicularly to the longitudinal axis of the mounting bar, in that at least most of the retaining members are freely slideable along the mounting bars to enable adjustment of the retaining members relative to the mounting ribs, and in that each retaining member includes two jaws, facing each other, said jaws being directed outwardly at an angle to the mounting bar and at their outer ends being connected by means of a connecting member which defines an upwardly open and in the initial position of the jaws substantially trapezoidal recess, in which the mounting rib fits and which, when the panel element is pushed inwardly, closes around the mounting rib, so that the jaws retain the same.

4,262,466

ROOFING TILES

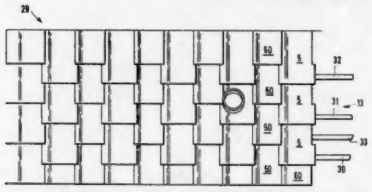
Vernon S. Roe, Redhill, England, assignor to Redland Roof Tiles Limited, Surrey, England

Filed Jan. 29, 1979, Ser. No. 7,174

Claims priority, application United Kingdom, Jan. 27, 1978, 3485/78

Int. Cl.[3] **E04D** *1/00, 1/34*

U.S. Cl. 52—550 **6 Claims**



3. A tile roof comprising a plurality of parallel regularly spaced tile supporting battens extending generally horizontally along the roof and a plurality of roofing tiles, each tile being of moulded concrete and having at least two projecting nibs on the underside of the tile which nibs are spaced apart along the length of the tile whereby the tile may be hung on a batten from either nib, an edge portion of the tile being cut away to receive a portion of a second tile in a vertical row adjacent a vertical row occupied by the said tile end staggered with regard to the said tile, the tiles being arranged in vertical rows hung on the battens, the tiles in adjacent vertical rows being staggered with respect to each other and being hung on the battens by different ones of the two nibs.

4,262,467

MODULAR ELEMENTS FORMING BY ASSEMBLY A SET OF VERTICAL OR HORIZONTAL SPACES IN A SINGLE PLANE OR OFFSET PLANES

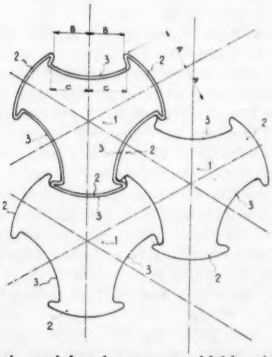
Gilles Faisant, and Gaston Reverdy, both of La Roche sur Yon, France, assignors to S I P A (Societe Industrielle des Plastiques de l'Atlantique), La Roche sur Yon, France

Filed Jan. 12, 1979, Ser. No. 2,949

Claims priority, application France, Jan. 18, 1978, 78 02804

Int. Cl.[3] **E04C** *1/10*

U.S. Cl. 52—590 **10 Claims**



1. A prismatic modular element assemblable with two similar elements, said element having a cross section with the shape of a regular star having arms, said arms being symmetrical relative to an axis passing through the center of said star, and the outermost ends of said arms being widened in a direction perpendicular to the axis of the arms to form a single projection on each side of the arms, said projections forming a dovetail tenon, the spaces between the projections on adjoining arms forming dovetail mortises of a width substantially equal to the width of said dovetail tenons, said star having three arms and each projection being cooperable with two similar projections borne by two similar elements, constituting with one of said similar projections a part of a tenon, and with the other of said similar projections a part of a mortise.

4,262,468

DEVICE FOR SPACING APART OBJECTS CONVEYED THROUGH AN OPERATION-PERFORMING MACHINE

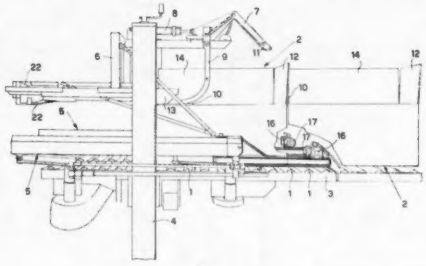
Augusto Marchetti, Piazza Sicilia 7, Milan, Italy

Filed Dec. 15, 1978, Ser. No. 970,066

Claims priority, application Italy, Feb. 17, 1978, 20373 A/78

Int. Cl.[2] **B65B** *57/04, 7/20*

U.S. Cl. 53—67 **1 Claim**



1. A device for spacing apart objects conveyed through an operation-performing machine comprising

a surface for supporting and feeding the objects including a predetermined zone,

operation-performing means located along said surface for operating on the objects as they pass through said predetermined zone,

a pair of transverse pushers disposed along two sides of said support surface, upstream of said predetermined zone and operable on command from a withdrawn rest position to an extended working position in which they are able to engage with opposing sides of an object disposed between them to prevent its further forward movement,

means sensitive to the position of the objects along said support surface, operationally connected to said transverse pushers and disposed in such a manner as to control the movement of said pushers into their extended position for the momentary stoppage of a second object before a first object has entered said predetermined zone, and the return of said pushers into their withdrawn position for releasing said second object after the first object has left said predetermined zone,

said pushers including

pusher heads,

a pneumatic cylinder connected to each of said pusher heads,

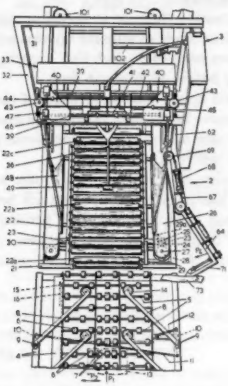
divaricable portions of belt conveyor units supporting said cylinders and engageable with the sides of the objects for conveying the objects,

resilient means acting on said divaricable portions to yieldably urge them towards a state of alignment with each other.

4,262,469
APPARATUS FOR CLOSING BOXES

Hans Ooms, Witte de Withstraat 13, Noordwijk, and Joseph J. M. Smidt, Const. Huygenslann 51, Leiden, both of Netherlands

Filed Jun. 6, 1979, Ser. No. 45,927
Int. Cl.³ B65B *57/00, 7/20*
U.S. Cl. 53—76 **13 Claims**



1. An apparatus for closing the four top flaps of a box comprising:

two transport belts, said belts being movable into engagement with the side walls of said box;

a bridge positioned above said transport belts, said bridge being movable to varying height positions;

means for bringing said box, the four top flaps of which are open, between said transport belts;

sensing means extending from said bridge, said sensing means engaging the fore wall of said box when said bridge is in its lowest position;

means responsive to said sensing means for raising said bridge and operating said transport belt for moving said box towards said bridge, said sensing means being raised thereby above said fore wall, the fore wall flap being closed by engagement with said sensing means as said box is moved thereunder;

means responsive to said sensing means for closing the rear wall flap concurrently with said fore wall flap closure;

means for folding the side wall flaps, said folding means extending downwardly at an angle from said bridge to present a surface which closes in on said side wall flaps as said bridge and said flaps are raised; and

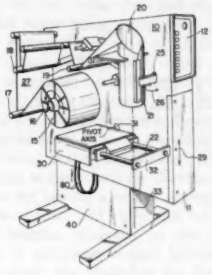
means closing said side wall flaps by engagement along the longitudinal edges thereof, said side wall flaps closing means responsively operating after said fore and rear flap closures.

4,262,470
PACKAGING SYSTEM WITH CANTILEVERED WEB FEED SYSTEM ACCESSIBLE FOR CHANGING WEB

Daniel L. Reuter, Waldorf, Md.; Philip L. Reid, Duncan, S.C.; Charles M. Blackburn, Davidsonville, Md., and Clifton W. Heffner, Charlotte, N.C., assignors to Sigma Systems, Inc., Capitol Heights, Md.

Filed Oct. 30, 1978, Ser. No. 955,720
Int. Cl.³ B65B *9/08, 51/30, 41/14*
U.S. Cl. 53—202 **9 Claims**

1. A packaging system for making packages about a product from a continuous web feeding thereinto from a roll, said system including a package forming mechanism having a panel, with all movable members for feeding the web to form packages including a set of rollers cantilevered to one side of said panel and with all movable members rotatable about axes perpendicular thereto, and a single advancing mechanism for pulling the web from the roll through the package forming mechanism to form a package of predetermined length a pivoted carriage extending from a pivot shaft on said one side of the panel to reciprocate by rotation of said pivot shaft from a

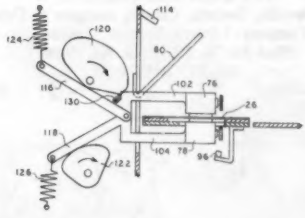


pivoting mechanism inside said panel thereby moving said carriage over a pivot stroke and including web clamping means on said carriage operable during a predetermined stroke length to grasp the web intermittently and pull said length of the web through said package forming mechanism.

4,262,471
ENVELOPE PROCESSING MACHINE

Robert J. Russell, Medford, N.J., assignor to Mail-Ex Corporation, Skokie, Ill.

Filed Jun. 15, 1979, Ser. No. 48,992
Int. Cl.³ B65B *43/30*
U.S. Cl. 53—381 R **15 Claims**

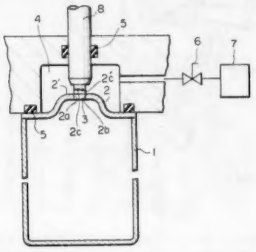


1. An envelope processing machine comprising: a supply hopper for envelopes; an envelope processing station, means for removing envelopes in one-by-one relationship from the supply hopper and for transmitting the removed envelopes to the envelope processing station; and envelope opening means at said processing station including a pair of relatively reciprocating tacky adhesive means arranged to pivot from a retracted position and to grip and separate opposite panels of an envelope to facilitate the removal of contents therefrom, said machine further including stripping means non-movably mounted on said machine for engaging only the outside panels of the envelope for removing said envelope panels from said tacky adhesive means upon said tacky adhesive means returning to retracted position.

4,262,472
GAS FILLING METHOD

Yuji Soeda, Hatano, and Akio Goto, Isehara, both of Japan, assignors to Tokiko Ltd., Kanagawa, Japan

Continuation of Ser. No. 886,574, Mar. 14, 1978, abandoned.
This application Jul. 31, 1979, Ser. No. 62,574
Int. Cl.[3] B65B *31/04*
U.S. Cl. 53—403 **1 Claim**



1. A method of filling gas into a gas spring or shock absorber, said method comprising the steps of:

providing a gas spring or shock absorber having a metal end wall;

forming two spaced cut lines in said metal end wall with a wall portion defined between said two spaced cut lines;

deforming outwardly said wall portion defined between said two spaced cut lines, and thereby forming a gas introducing passage through said cut lines;

supplying pressurized gas into said gas spring or shock absorber through said gas introducing passage;

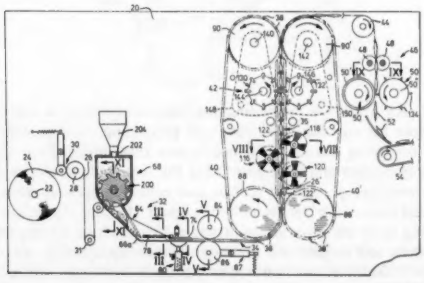
deforming inwardly said wall portion by applying thereto a pressing force by means of an electrode of a resistance welding device, thereby closing said gas introducing passage; and

thereafter permanently securing the the inwardly deformed wall portion to said metal end wall by resistance welding with said electrode, thereby forming a gas filled gas spring or shock absorber.

4,262,473
METHOD AND APPARATUS FOR MANUFACTURING TEA BAGS AND THE LIKE

Arthur A. Brooke, Toronto, Canada, assignor to Delamere & Williams Company, Limited, Toronto, Canada

Filed Jul. 24, 1979, Ser. No. 60,080
Int. Cl.[3] B65B *9/12*
U.S. Cl. 53—450 **17 Claims**



1. A method of manufacturing tea bags and like comprising the steps of:

continuously forming at least one web of a porous heat sealable material into a flattened, closed tube having opposed upper and lower walls while introducing a continuous stream of tea and the like into said tube;

causing the tube to travel generally horizontally following said introduction of tea and the like;

pinching the tube to cause said upper and lower walls to move towards one another at successive locations along pinch lines disposed transversely of the tube and spaced longitudinally of the tube to correspond generally to the required bag length;

subsequently causing the tube to travel upwardly so that the tea and the like tends to migrate downwardly under gravity away from each said pinch line, creating a voided area immediately below each pinch line;

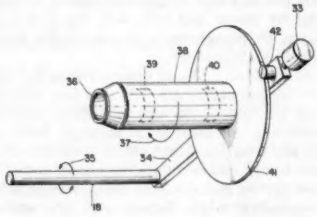
heat sealing said upper and lower walls of the tube together along successive bands each disposed in one of said voided areas of the tube and extending transversely of the tube to form a heat seal; and,

separating successive sections fron the tube to form individual tea and like bags or groups of such bags by severing the tube along lines each disposed generally centrally of one of said heat seals so that portions of each seal on opposite sides of said line form end seals of successive bags.

4,262,474
WEB FEEDING SYSTEM FOR PACKAGE FORMING MACHINE

Daniel L. Reuter, Waldorf, Md.; Philip L. Reid, Duncan, S.C.; Charles M. Blackburn, Davidsonville, Md., and Clifton W. Heffner, Charlotte, N.C., assignors to Sigma Systems, Inc., Capitol Heights, Md.

Filed Oct. 30, 1978, Ser. No. 955,574
Int. Cl.[3] B65B *9/08, 41/14, 51/30*
U.S. Cl. 53—551 **11 Claims**

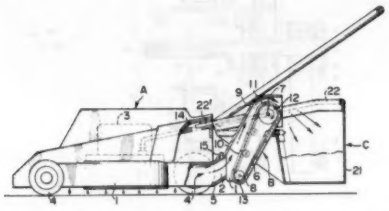


1. A packaging machine having a feed system for advancing a web asynchronously from a rotatable web roll in separated incremental periods by release of corresponding incremental lengths and for forming therewith a package, including web advancing means for pulling the web through the feed system consisting of a reciprocating member for grasping the web at a position following the formation of the package to move it over said incremental lengths and returnable to grasp a succeeding length of web, and braking means having a brake member movable into braking engagement with said web role for controlling rotation of the web roll and including a feed roller operated solely by movement of the brake member as it moves into braking engagement with the feed roll to meter out a length of web substantially equal to a package length before the brake is reengaged, whereby feed of the web through the feed system will occur primarily from said length only during the incremental period that the web is grasped and advanced by said advancing means.

4,262,475
METHOD AND APPARATUS FOR COLLECTING GRASS CLIPPINGS

Katsuhiko Takahashi, Tokorozawa; Hachiro Doi, Saitama, and Masayuki Yaegashi, Kiyose, all of Japan, assignors to Fuso Keigokin Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1979, Ser. No. 20,667
Claims priority, application Japan, Apr. 28, 1978, 53-52585
Int. Cl.³ A01D *61/02, 53/04*
U.S. Cl. 56—16.6 **15 Claims**



1. An apparatus for collecting grass clippings comprising:

a lawn mower including a cutting blade mounted for rotation on a vertical shaft, said cutting blade being adapted for severing the grass clippings;

a motor being operatively attached to said lawn mower and being adapted to impart rotation to said cutting blade;

a discharge opening being provided at the rear of the lawn mower and being disposed in a tangential direction to the rotation of said cutting blade, said discharge opening being defined by predetermined width and height dimensions;

a conveyor member being positioned adjacent to said discharge opening of said lawn mower to receive and convey the grass clippings to a catcher disposed behind said conveyor member and positioned to receive grass clippings therefrom;

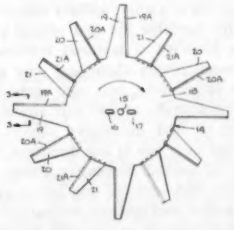
said conveyor member including at least one endless conveyor belt having cross ribs extending across the width dimension thereof to continuously convey said grass clippings to said catcher and said conveyor belt extending across substantially the entire predetermined width dimension of said discharge opening; and

flexible transmission means operatively connected to said motor to impart rotation to said conveyor member, wherein rotation of said motor imparts rotation to said cutting blade and said conveyor belt which operate in cooperation with each other to sever and convey grass clippings to said catcher.

4,262,476
COMMINUTING POWERED LAWN MOWER

Salvatore Benenati, 77 Woodside Dr., Red Bank, N.J. 07701

Filed Jun. 22, 1979, Ser. No. 51,025
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **1 Claim**



1. A powered lawn mower adapted to comminute grass to provide a mulch for a substantially planar lawn, said mower being provided with means to advance the mower in a horizontal path toward unmown grass on said lawn comprising:

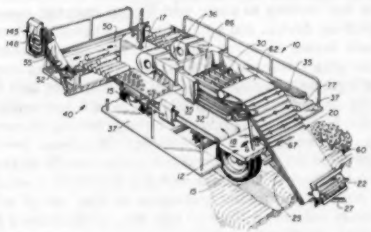
A. an inverted housing on which a motor is supported, the motor having a drive shaft extending into the housing at right angles to the plane of said lawn; and

B. a rotor secured to the shaft and disposed within the housing, said rotor being constituted by a planar hub from which radiate three sets of blades lying in respective planes substantially parallel to the plane of said lawn, the blades in each set being 90 degrees apart, the blades of the second set being displaced 30 degrees from the blades in the first set, and the blades in the third set being displaced 30 degrees from those in the second set, the first set of blades being in the plane of the hub, the second and third sets being at progressively decreased levels, the blades in the first set having a length providing the longest reach, and the second and third sets having progressively reduced lengths, whereby as the rotor rotates and the mower is advanced in said horizontal path toward unmown grass, the blades in the first set which have the longest reach act to cut pieces from the upper portions of the grass, this action being followed by the blades in the second and third sets, each of which acts to cut pieces from the grass at the level corresponding to the set level whereby each blade of grass is cut into as many pieces as there are sets; said blade sets being at staggered angular positions, each blade having a leading edge which is sharpened to define a cutting edge and is pitched to define an air foil acting to create an updraft, the pitched leading edges also functioning as reinforcement ribs, said rotor being fabricated from a single piece of sheet metal which is stamped to define said sets of blades.

4,262,477
FRESH MARKET TOMATO HARVESTER

William E. Turold, Woodland; Marvin O. Cufaude, Davis; Frank A. Diaz, Sacramento, and Robert A. Hanson, Roseville, all of Calif., assignors to Johnson Farm Machinery Co., Inc., Woodland, Calif.

Filed Jun. 12, 1979, Ser. No. 47,848
Int. Cl.³ A01D *17/08*
U.S. Cl. 56—327 R **5 Claims**



1. A fresh market tomato harvester for collecting tomatoes from a field and delivering them into a waiting receptacle in condition suitable for ultimate sale in their raw, natural state comprising:

means for gathering tomato vines and tomatoes from said field and for transporting them onto the harvester, said gathering means including a first conveyor having upwardly extending, forwardly directed tines, said tines being covered with a resilient material to avoid bruising of said tomatoes;

shaking means for separating said tomatoes from said vines, said shaking means including tomato confronting portions that are covered with a resilient material to avoid bruising said tomatoes, wherein said tomatoes upon being shaken from said vines fall downwardly; a second conveyor for

receiving said falling separated tomatoes, the surface of said second conveyor adapted to prevent tomatoes falling thereupon from being bruised;

means for transporting said tomatoes to a first location on said harvester; and

sizing means located at said first location including means defining openings through which tomatoes beneath a minimum predetermined size may fall and means for discharging said undersized tomatoes, while retaining those tomatoes above said predetermined size.

4,262,478

AGRICULTURAL MACHINE

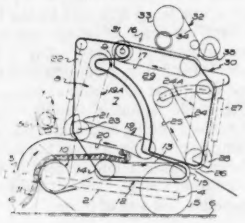
Gerald R. O. Pentith, Derby, England, assignor to Brockadale Developments Limited, Derby, England

Filed Feb. 1, 1980, Ser. No. 117,518

Claims priority, application United Kingdom, Feb. 7, 1979, 04405/79

Int. Cl.³ A01D *39/00*

U.S. Cl. 56—341 **17 Claims**



1. An agricultural machine for forming a round bale of windrowed fibrous material comprising a displaceable chassis having a forward end and a rearward end, spaced apart side plates carried by said chassis and defining the width of a bale-forming chamber, a pick-up device located towards said forward end of said chassis and adapted to pick-up fibrous material from the ground, a carrying surface on to which said fibrous material is discharged by said pick-up device, said carrying surface extending generally horizontally, and being part of a first, fixed position belt conveyor defining a bottom of said bale forming chamber and having a head end adjacent said pick-up device and a return end remote from said pick-up device and serving to carry said fibrous material away from said pick-up device, and a plurality of additional belt conveyors each having an active surface adapted to co-operate with said carrying surface of said first, fixed position belt conveyor in the forming of a round bale by the rolling of said fibrous material, at least one of said additional belt conveyors being movable by having one conveyor end pivotably mounted, so that its other end is arcuately movable from an inner position to an outer position as said round bale progressively increases in diameter, means to urge said movable conveyor towards said inner position and means to displace at least one of said belt conveyors whereby a finished bale may be discharged from a rearward end of said machine.

4,262,479

MULTITWIST SPINDLE

Ferdinand Lenorak, Bratislava, Czechoslovakia, assignor to Slovenska vedecko-technicka spolocnost, Dom techniky, Bratislava, Czechoslovakia

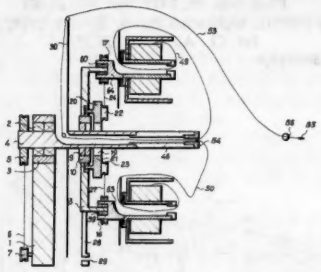
Continuation of Ser. No. 776, Jan. 3, 1979, abandoned. This application Apr. 11, 1979, Ser. No. 29,112

Claims priority, application Czechoslovakia, Jan. 9, 1978, 160/78

Int. Cl.³ D01H *7/86, 1/10*

U.S. Cl. 57—58.54 **5 Claims**

1. A multitwist spindle for processing of endless fibers comprising a pair of spaced apart upright supports, a main support located between said upright supports, a drive shaft rotatably mounted at the lower end portion of each upright support and extending therethrough, a shaft rotatably mounted at the upper end portion of each upright support, each said shaft additionally being rotatably supported by said main support, two countershafts rotatably supported by said main support, a yarn carrier fixed to each countershaft, and means for operably connecting said shafts and countershafts for rotation.



4,262,480

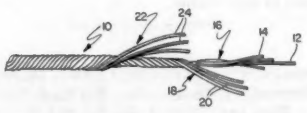
NOVELTY YARN AND METHOD AND APPARATUS OF MAKING SAME

Allan Wasserman, 29 Kennedy Blvd., Lincoln, R.I. 02865, and Frederick A. Lowenstein, 66 Park Ave., New York, N.Y. 10016, assignors to Frederick A. Lowenstein, New York, N.Y.; Ronnee M. Wasserman and Allan Wasserman, both of Lincoln, R.I.

Filed Mar. 1, 1979, Ser. No. 17,913

Int. Cl.³ D02G *3/02*

U.S. Cl. 57—227 **5 Claims**



1. A bendable, shape-retentive decorative composite novelty yarn comprising:

(a) a core consisting of a single solitary uncoated wire strand that is readily bendable but that retains its shape when bent, and a plurality of textured synthetic core yarns disposed non-adhesively about said wire strand so as to substantially cover same, said core yarns extending substantially longitudinally of said wire strand;

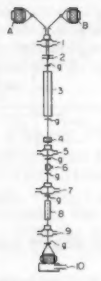
(b) a plurality of first decorative cover yarns spirally wrapped about said core in one direction; and

(c) a plurality of second decorative cover yarns spirally wrapped about said core and said first cover yarns in the opposite direction, said first and second cover yarns being prevented from slipping axially with respect to said core because of the frictional engagement of said first cover yarns with said texturized core yarns.

4,262,481
SPUN YARN-LIKE HIGH BULKY TEXTURED YARNS AND PROCESS FOR PRODUCING SAME

Yukio Otaki; Kazuo Umeda, and Kiyoshi Nakagawa, all of Mishima, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,325
Int. Cl.[3] D02G 1/02, 3/04, 3/24
U.S. Cl. 57—245 13 Claims



1. A spun yarn-like high bulky textured yarn comprised of two types of polyester multifilament component yarns A and B, the difference in monofilament denier $\Delta[d]_{B-A}$ of the component yarn B from the component yarn A being not less than 1.0 denier, the intrinsic viscosity $[IV]_A$ of the component yarn A being not less than 0.48 and the difference in intrinsic viscosity $\Delta[IV]_{B-A}$ of the component yarn B from the component yarn A being not less than 0.06, and the textured yarn having a broken filament count of not more than 25 per meter of its length, a difference in length of the component yarn A from the component yarn B of not more than 12% and a crimp stretchability of not more than 10%.

9. A process for producing a spun yarn-like high bulky textured yarn comprised of two types of polyester multifilament component yarns A and B, the difference in monofilament denier $\Delta[d]_{B-A}$ of the component yarn B from the component yarn A being not less than 1.0 denier, the intrinsic viscosity $[IV]_A$ of the component yarn A being not less than 0.48 and the difference in intrinsic viscosity $\Delta[IV]_{B-A}$ of the component yarn B from the component yarn A being not less than 0.06, and the textured yarn having a broken filament count of not more than 25 per meter of its length, a difference in length of the component yarn A from the component yarn B of not more than 12% and a crimp stretchability of not more than 10%, which comprises:

passing two types of undrawn polyester multifilament yarns A and B, the intrinsic viscosity $[IV]_A$ of the undrawn yarn A being not less than 0.48, the difference in intrinsic viscosity $\Delta[IV]_{B-A}$ of the undrawn yarn B from the undrawn yarn A being not less than 0.06 and the difference birefringence $\Delta[\Delta n]_{B-A}$ of the undrawn yarn B from the undrawn yarn A satisfying the expression: $2\times10^{-3}\leqq\Delta[\Delta n]_{B-A}\leqq6\times10^{-3}$, separately through a feed roller;

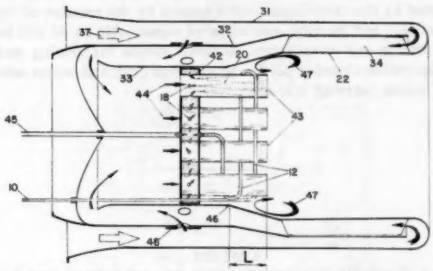
simultaneously draw-texturing the undrawn yarns A and B together while doubling them with substantially identical intertwisting angles immediately after an intertwisting regulative device provided between the feed roller and a heater for fixing the twists, whereby the difference in monofilament denier $\Delta[\Delta d]_{B-A}$ of the yarn B from the yarn A is made not less than 1.0 denier and some of the individual filaments of the yarn A are partially cut to produce broken filaments, and;

taking up the draw-textured yarns A and B together.

4,262,482
APPARATUS FOR THE PREMIXED GAS PHASE COMBUSTION OF LIQUID FUELS

Gerald A. Roffe, 3 Markwood La., East Northport, N.Y. 11731, and Horacio A. Trucco, 13 Saddler Ct., Huntington Station, N.Y. 11746

Continuation-in-part of Ser. No. 852,225, Nov. 17, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,614
Int. Cl.[3] F02C 7/224
U.S. Cl. 60—736 1 Claim

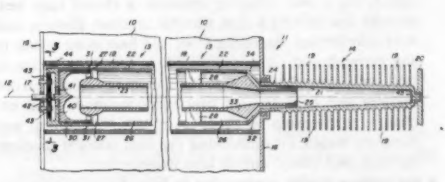


1. A combustion apparatus comprising, in combination, outer, intermediate and inner casings disposed such that combustion air flows from a passage formed between said outer and intermediate casings into a passage formed by said intermediate and inner casings, air supply means, liquid fuel supply means, a combustion duct which expands to produce a region of recirculating hot gases, fuel gassification tube disposed within said region of recirculating hot gases so as to utilize heat liberated by combustion to accomplish liquid fuel gassification, a plurality of fuel/air premixing tubes, a plenum chamber which receives gassified fuel from said fuel gassification tubes and distributes said gassified fuel to orifices in said fuel/air premixing tubes, regenerative heat exchange means located between said combustion duct and said intermediate casing to preheat the combustion air stream, means to vary the position of the assembly comprised of said plenum chamber and said fuel/air premixing tubes, ignition means, means to allow a portion of the combustion air to bypass the regenerative heat exchange section, and means to supply gaseous fuel into said plenum chamber to start the process.

4,262,483
ROTATING HEAT PIPE SOLAR POWER GENERATOR

Arie M. DeGeus, 6625 4th St., S., St. Petersburg, Fla. 33705

Filed Jul. 20, 1978, Ser. No. 926,393
Int. Cl.[3] F03G 7/02; F01K 25/06
U.S. Cl. 60—641 10 Claims



1. A rotating heat pipe solar power generator containing a liquid which forms a relatively large volume of gas when vaporized, comprising a heat pipe, a tube concentrically positioned within said pipe and fixed thereto to define an annular evaporation chamber between the two, said tube having stator blades fixed thereto, a rotor including rotor blades positioned near one end of said heat pipe, the other end of said heat pipe

providing a relatively small diameter condenser section remote from said rotor, said concentrically positioned tube extending away from said rotor into the entrance portion of said condenser section and said tube including a section of enlarged diameter positioned at the juncture of said evaporation chamber and condenser section to form an annular throat with an annulus which tapers outwardly as one moves toward said rotor, said throat providing a centrifugal pump, said heat pipe tapering outwardly in both sections thereof as these sections progress toward said rotor so that the vaporizable liquid condensed in said condenser section will be moved toward said throat by the centrifugal force imposed by the rotation of the heat pipe and the tube, and a film of vaporizable liquid will be formed in said evaporation chamber, means for heating said evaporation chamber portion of said heat pipe, and power take off means carrying said rotor.

4,262,484

GAS TURBINE ENGINE POWER PLANT USING SOLAR ENERGY AS A HEAT SOURCE

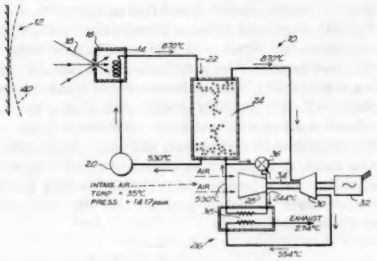
Albert Jubb, and Eric W. Stansbury, both of Kenilworth, England, assignors to Rolls-Royce Limited, London, England

Filed Oct. 13, 1978, Ser. No. 951,253

Claims priority, application United Kingdom, Oct. 18, 1977, 43238/77

Int. Cl.³ F03G 7/02

U.S. Cl. 60—641 **7 Claims**



1. A solar energy power plant comprising:

a closed cycle radiant energy collecting and storing system including a radiant energy collecting and directing means, a radiant energy heat receiving means for receiving radiant energy heat from said collecting and directing means, a relatively large capacity pressurized heat store means containing a heat retaining medium, a closed loop heat transfer line having a heat transfer medium therein, said heat transfer line extending from said heat store means to and through said radiant energy heat receiving means in heat exchange relationship to radiant energy heat received thereby and back to said heat store means in heat exchange relationship to the heat retaining medium, and pumping means for circulating the heat transfer medium through said closed circuit heat transfer line;

a gas turbine engine comprising in flow series compressor means arranged to receive atmospheric air, said heat store means arranged to receive compressed air from said compressor means in heat exchange relationship so as to heat the same, and turbine means arranged to receive and be driven by the heated compressed air from said heat store means; and

load means driven by said turbine means.

4,262,485

LOW BOILING POINT MEDIUM POWER PLANT

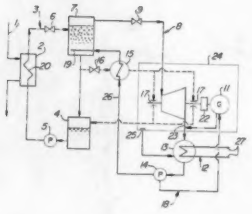
Michio Kuroda, Hitachi; Shozo Nakamura, Hitachi-Ota; Ryoichiro Oshima, and Takamitsu Taki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 964,818

Claims priority, application Japan, Dec. 2, 1977, 52/143910

Int. Cl.³ F01K 11/02, 25/10

U.S. Cl. 60—669 **9 Claims**



1. A low boiling point medium power plant utilizing waste heat comprising:

intermediate thermal medium heater means for transferring heat from a waste heat source to an intermediate thermal medium;

direct heat exchanger means for transferring heat from said intermediate thermal medium to a low boiling point medium; and

generator means coupled to said turbine means for generating power; wherein said intermediate thermal medium heat means and said direct heat exchanger means are both disposed in a single casing in a heat exchanging relationship with each other, with the intermediate thermal medium flowing between the heater means and the heat exchanger means so that the heater means and heat exchanger means form a single unit.

4,262,486

COMBUSTION CHAMBERS

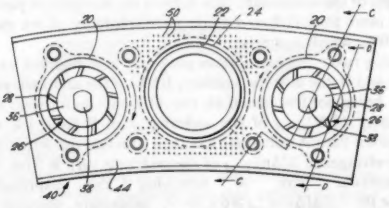
Robert L. J. Russell, Lutterworth, England, assignor to Rolls-Royce Limited, London, England

Filed Jun. 29, 1979, Ser. No. 53,309

Claims priority, application United Kingdom, Aug. 19, 1978, 33941/78

Int. Cl.³ F02C 7/22

U.S. Cl. 60—746 **8 Claims**



1. A combustion chamber arrangement for a gas turbine engine comprising:

a combustion chamber having a closed upstream end, an open downstream and dilution air inlets in the wall thereof between said closed upstream end and said open downstream end;

at least one fuel inlet aperture in said closed upstream end of said combustion chamber;

fuel injector means positioned in said fuel inlet aperture for discharging fuel into said combustion chamber on a predetermined axis, said fuel injector means substantially filling said fuel inlet aperture so that any air entering said com-

bustion chamber through said fuel aperture around said fuel injector means is minimal and nonswirled;

a plurality of primary air inlet apertures in said closed upstream end of said combustion chamber through which substantially all primary air is discharged thereto, said at least one fuel inlet aperture being positioned intermediate two of said plurality primary air inlet apertures; and

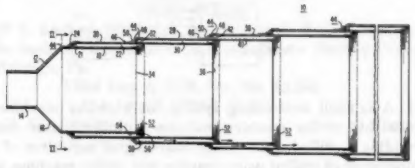
swirl means in each of said plurality of primary air inlet apertures, each of said swirl means imparting a swirling motion to primary air passing therethrough about an axis spaced from said predetermined axis of fuel being discharged by said fuel injector means, and said swirl means in said two of said plurality of primary air inlet apertures swirling air in the same direction of rotation so as to provide a shearing action directly to fuel discharging from said fuel injector means.

4,262,487

DOUBLE WALL COMBUSTION CHAMBER FOR A COMBUSTION TURBINE

Robert G. Glenn, Huntingdon Valley, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 1, 1979, Ser. No. 8,317
Int. Cl.³ F02C 7/18
U.S. Cl. 60—757 **3 Claims**



1. A combustion chamber for a combustion turbine engine, said chamber defining a generally cylindrical configuration having an inlet end and an opposed discharge end and a portion intermediate the opposed ends defining a double-walled configuration comprising a plurality of individual axially extending serially arranged cylindrical segments with the adjacent segment downstream from any one segment having a greater diameter than said one segment and axially overlapping said one segment to define an annular axially extending gap therebetween providing an airflow path into said chamber and wherein the initial edge of said downstream segment is generally axially aligned with the terminal edge of the adjacent segment upstream from said one segment; and

a first annular connecting member for securing said downstream segment to said one segment adjacent said initial edge; and

a second annular connecting member for securing said upstream segment to said one segment adjacent said terminal edge;

said first and second annular connecting members each comprising a wire mesh.

4,262,488

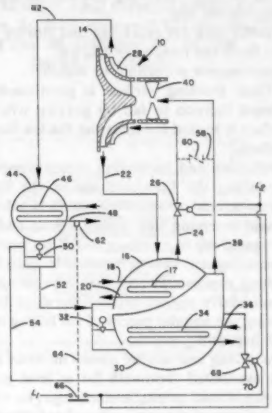
SYSTEM AND METHOD FOR CONTROLLING THE DISCHARGE TEMPERATURE OF A HIGH PRESSURE STAGE OF A MULTI-STAGE CENTRIFUGAL COMPRESSION REFRIGERATION UNIT

Robert D. Conine, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,837
Int. Cl.³ F25B 5/00
U.S. Cl. 62—117 **13 Claims**

1. A system for controlling the discharge temperature of a high pressure stage of a multi-stage centrifugal compression refrigeration unit of the type utilizing relatively low pressure refrigerant discharged from a low pressure stage to satisfy a cooling load and relatively high pressure refrigerant discharged from a high pressure stage to satisfy a heating load comprising:

means for maintaining a continuous flow of refrigerant through said high pressure stage regardless of changes in the heating load thereon; and



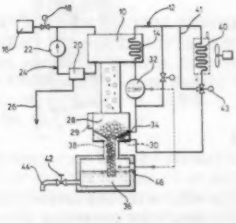
refrigerant flow control means responsive to the changes in the heating load on the high pressure stage for substantially equalizing the pressure between the inlet and discharge sides of said high pressure stage when the load on said high pressure stage decreases below a predetermined level.

4,262,489

METHOD OF AND APPARATUS FOR PRODUCING PURE WATER

Shigetoshi Sakamoto, Aichi, Japan, assignor to Hoshizaki Electric Co., Ltd., Toyoake, Japan

Continuation of Ser. No. 748,535, Dec. 8, 1976, abandoned. This application Nov. 27, 1979, Ser. No. 98,197
Claims priority, application Japan, Jun. 5, 1976, 51-65931
Int. Cl.³ B01D 9/04; C02F 1/22
U.S. Cl. 62—124 **7 Claims**



1. In an apparatus for preparing pure water which includes:

an ice making mechanism having a fixed freezing surface for forming ice thereon;

means for flowing raw water obtained from a water source over said fixed freezing surface at a rate sufficient to cause a pure ice mass to gradually grow on said freezing surface while said flowing raw water carries away the impurities which remain from the portion of the raw water which has been frozen;

means for releasing the thus grown ice mass from said freezing surface by heating said freezing surface and for har-

vesting said released ice separately from the unfrozen portion of the raw water;

a raw water collecting tank means for collecting raw water from said freezing surface and for recirculating raw water to said freezing surface;

means for directly receiving and storing ice from said harvesting means; and

a pure water tank for receiving and storing pure water obtained from the melting of the ice,

the improvements according to which:

said fixed freezing surface is positioned to permit ice formed thereon to fall by gravity when said freezing surface is heated for releasing the ice from said freezing surface,

said releasing and harvesting means comprises means for producing the harvested ice in the form of angular pieces which are relatively small in relation to the size of said receiving and storing means, and permitting the harvested ice to continue to fall by gravity,

the receiving and storing means is located beneath said ice making mechanism and said harvesting means in perpendicularly aligned relation for directly receiving and storing the angular pieces of ice falling by gravity from said harvesting means,

said receiving and storing means includes means structurally associated therewith for at least partially melting the ice in said storing means,

said receiving and storing means has in the bottom portion thereof means permitting pure water produced by the melting of the ice and part of the ice to fall downwardly; and

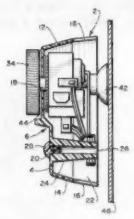
said pure water tank is located immediately below said receiving and storing means and said fall permitting means for directly receiving and storing at a prescribed low temperature said part of the ice along with the pure water.

4,262,490

SELECTIVELY MOUNTABLE COLD CONTROL DEVICE

Eugene T. McKinnon, 16536 Chattanooga Pl., Pacific Palisades, Calif. 90272, and Alvin S. Drutz, 11613 Clover Ave., Los Angeles, Calif. 90066

Filed Jun. 25, 1979, Ser. No. 51,800
Int. Cl.[3] F25B *49/00*; H01H *37/04*
U.S. Cl. 62—132 **10 Claims**



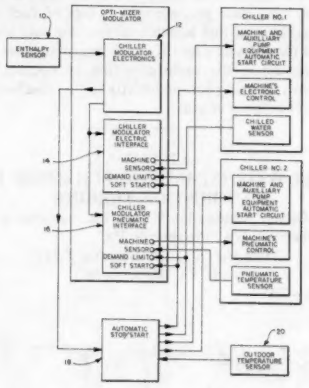
1. A cold control or the like device for selective temporary or permanent installation comprising the combination: a thin-walled housing defined by at least front and sidewalls, said front wall having an open bore adapted to permit disposition of a temperature regulator shaft therethrough; a pair of spaced mounting means, each secured within said housing in juxtaposition to said open bore for selectively mounting said device in temporary and releaseable fashion; a temperature regulator secured within said housing and having a shaft projecting through said open bore and carrying a dial knob on the end thereof; and a plugged aperture communicating the exterior surface of said front wall into the interior of said housing and having an internally extending boss thereabout adapted to alternatively carry a singular mounting member for alternatively mounting said device.

4,262,491

ELECTRONIC MODULATING SYSTEM FOR AIR CONDITIONING APPARATUS

James E. Chorey, and John Burch, both of Seattle, Wash., assignors to Controlled Energy Systems Company, Seattle, Wash.

Filed Mar. 24, 1978, Ser. No. 889,630
Int. Cl.[3] F25D *17/02*; G05D *23/00*
U.S. Cl. 62—185 **17 Claims**



1. A control modulating system for a chiller machine in which said chiller machine includes a chiller sensor means providing a chilled water temperature signal indicative of the temperature of chilled water leaving said chiller machine, said chiller sensor means being connected to said chiller machine through chiller sensor leads, said control modulating system comprising:

modulator sensor means located within the space to be controlled to detect and monitor at least the temperature conditions therein:

modulator controls for receiving input signals from said modulator sensor means and including an operator regulated set-point control for determining the desired conditions of the space to be controlled, said modulator controls also including means for generating a differential output signal which is indicative of the difference between said input signal and said set-point, said modulator controls further including an operator regulated sensitivity control for providing a multiplier factor for said differential output signal for generating an error signal; and

modulator interface circuit means for receiving said error signal from said modulator controls and for providing an offset signal to the chiller sensor leads to modify said chilled water temperature signal, thereby causing the chilled water temperature to rise a predetermined amount.

4,262,492

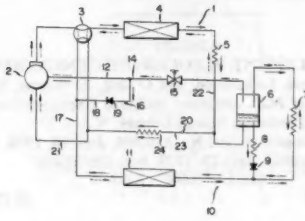
AIRCONDITIONER

Keiichi Morita; Tetsuo Kobayashi, both of Fujinomiya, and Takeshi Matsuo, Fuji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 9, 1979, Ser. No. 56,082
Claims priority, application Japan, Jul. 20, 1978, 53-88554
Int. Cl.[3] F25B *13/00, 31/00*
U.S. Cl. 62—324.6 **3 Claims**

1. An air conditioner having heat pump type refrigeration cycle components, comprising a rotary compressor having a compression side, a suction side and a guide port open to the interior of its cylinder, a refrigerant flow-changing valve, an indoor exchanger, a decompressing device, a gas-liquid separator and an outdoor heat exchanger, all communicating with each other for fluid flow therethrough in the above recited

order; an injection passage by which the guide port communicates with the gas-liquid separater and a portion of gas refrigerant is injected from said gas-liquid separater into the cylinder through said guide port; and a release passage having a first end and a second end connected between said indoor heat



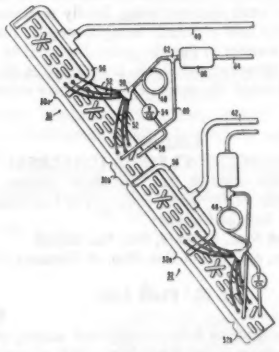
exchanger and the suction side of said compressor at said first end and said injection release passage at said second end, said release passage including means for releasing a portion of gas refrigerant being compressed in the said compressor and returning said portion to the suction side of said compressor.

4,262,493

HEAT PUMP

Robert S. Lackey, Pittsburgh, and Robert R. Young, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1979, Ser. No. 63,240
Int. Cl.[3] F25B *13/00*
U.S. Cl. 62—324.6 **7 Claims**



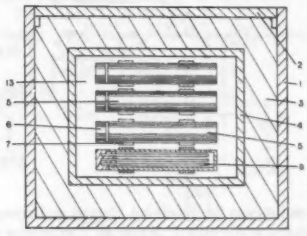
1. A heat pump operable to heat and to cool, comprising:
a refrigerant compressor;
and indoor heat exchanger;
an outdoor heat exchanger having a plurality of refrigerant flow circuits covering the major extent of the air flow surface of the exchanger, and separate refrigerant flow circuit means covering the remaining extent of the airflow surface of the exchanger;
reversing valve means for changing the refrigerant flow from one direction in which said outdoor exchanger acts as a condenser to the direction in which said outdoor exchanger acts as an evaporator;
refrigerant expansion means and check valve means for said outdoor heat exchanger;
means connecting said outdoor heat exchanger, expansion means and check valve means in an arrangement in which with said flow in said one direction, said flow passes first through said plurality of circuits and then said separate circuit means in series flow, and with said flow in said direction, said flow passes only through said plurality of circuits and is prevented from flowing through and out of said separate circuit.

4,262,494

PORTABLE DEVICE FOR CRYOPRESERVATION, TRANSPORTATION AND TEMPORARY CRYOGENIC STORAGE OF SEMEN AND OTHER SIMILAR TISSUE

Armand M. Karow, Jr., 3052 Westwood Ct., Augusta, Ga. 30909

Filed Jan. 30, 1980, Ser. No. 117,009
Int. Cl.[3] F25D *3/12*
U.S. Cl. 62—384 **8 Claims**



1. A device for cryogenically freezing, storing and transporting live tissue of living cells suspended in liquid medium comprising, in combination:
a. A stopper of a suitable non-heat conducting material, said stopper being fitted on its bottom end with a plurality of receptacles for the insertion and holding of tissue straws,
b. an elongated tubular canister of uniform cross-section, said canister being sealed at one end and open at the other end for the reception of said tissue straws and stopper into a chamber within said canister,
c. a means for maintaining said tissue straws substantially parallel and a positive distance from the interior walls of said chamber,
d. a first insulating medium filling said chamber,
e. a means for sealing said stopper to said canister,
f. a box for containing a plurality of said canisters,
g. a means for attaching said canisters to said box,
h. a second insulating medium filling said box,
i. an insulated shipping container fitted with a ventilated top,
j. a freezing medium to cryogenically freeze said tissue surrounding said box and contained within said container.

4,262,495

CABIN-AIR RECIRCULATION SYSTEM POWERED BY CABIN-TO-AMBIENT PRESSURE DIFFERENTIAL

Alankar Gupta, Renton, and Joe N. Runnels, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

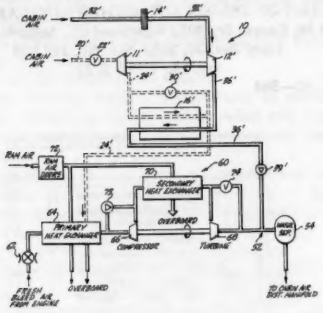
Filed Sep. 20, 1979, Ser. No. 76,979
Int. Cl.[3] F25D *9/00*
U.S. Cl. 62—402 **10 Claims**

1. In an air conditioning system having a primary air supply for introducing fresh air into the interior of an aircraft, and wherein the aircraft has a first compartment that is, during at least certain flight conditions, maintained at a pressure higher than that of ambient air surrounding the exterior of the aircraft, the improvement in said air conditioning system of a recirculation air supply, comprising:
an air driven turbine means including an air input and an air output;
first duct means for ducting air from said first compartment to said input of said turbine means;
second duct means for ducting air from said air output of said turbine means to an overboard exhaust in communication with ambient air so as to power said turbine means by the differential pressure existing between air in said first compartment and ambient air;

a source of filtered stale air available from the interior of said aircraft;

air compressor means having an air input and an air output;

third duct means for ducting said filtered stale air from said source thereof to said input of said compressor means; and



fourth duct means for receiving filtered and compressed air discharged at the output of said air compressor means and for recirculating said filtered and compressed air back into the interior of the aircraft.

4,262,496

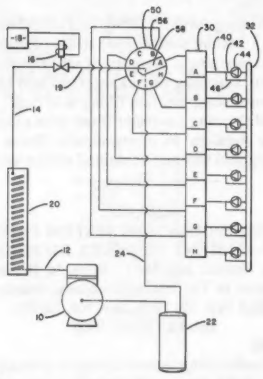
REFRIGERATION CIRCUIT DEFROST SYSTEM, METHOD AND COMPONENTS

William W. Bell, Jr., Marcellus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,438

Int. Cl.[3] F25B *39/02*

U.S. Cl. 62—504 **13 Claims**



1. A refrigeration system which comprises:

a compressor;

a condenser wherein gaseous refrigerant is condensed to liquid refrigerant;

a vapor line connecting the compressor to the condenser for conducting high pressure gaseous refrigerant thereto;

a heat exchanger divided into a plurality of heat transfer zones;

a selector valve for receiving liquid refrigerant from the condenser for discharging liquid refrigerant received from the condenser into at least one zone of the heat exchanger and for receiving gaseous refrigerant from at least one other zone of the heat exchanger;

a suction line connecting the selector valve to the compressor for conducting gaseous refrigerant from the selector valve to the compressor; and

said heat exchanger including routing means for receiving liquid refrigerant discharged into at least one zone of the heat exchanger and conducting said refrigerant to other zones of the heat exchanger from which gaseous refrigerant is returned to the selector valve.

4,262,497

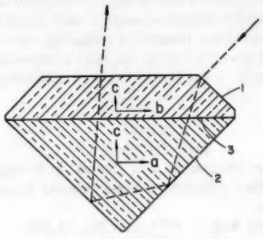
MULTI-ELEMENT PLEOCHROIC GENSTOMES

Robert C. Morris, Ledgewood, and O'Dell, E. Wayne, Morris Plains, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 870,386, Jan. 18, 1978. This application Apr. 23, 1979, Ser. No. 32,430

Int. Cl.[3] A44C *17/00*

U.S. Cl. 63—32 **15 Claims**



1. A multi-element transparent gemstone comprising an optically active rotator element disposed between two pleochroic elements, each element being fixedly mounted to the adjoining element said elements being arranged, relative to each other, in a manner so that the color displayed by individual ones of said pleochroic elements is modified in the combination at least through the action of said rotator element.

4,262,498

SEALING ARRANGEMENT FOR A UNIVERSAL JOINT

Werner Krude, Neunkirchen, and Karl-Heinz Müller, Wissen, both of Fed. Rep. of Germany, assignors to Uni-Cardan AG, Siegburg, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,023

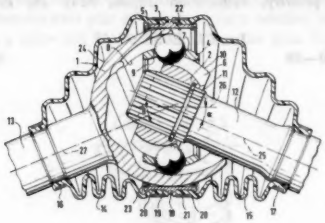
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1978, 2810942

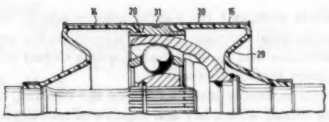
Int. Cl.[3] F16D *3/30*

U.S. Cl. 64—21 **9 Claims**

1. Sealing arrangement for covering and sealing the open space in a homokinetic universal joint, said universal joint comprising a driving part, a driven part, and means for transmitting torque between said driving and driven parts, one of said driving part and said driven part including an outer joint member forming a hollow space therewithin, the outer surface of said outer joint member being spherically shaped, the other of said driving part and said driven part including an inner joint member extending into the hollow space in said outer joint member, said outer joint member having grooves formed in the inner surface thereof defining the hollow space and said inner joint member having grooves formed on the outer surface thereof disposed opposite the grooves in the inner surface of said outer joint member, and said means for transmitting torque comprises rolling bodies located within and extending between said grooves in said outer and inner joint members, a sealing boot assembly laterally enclosing said universal joint and extending in the axial directions of and between said driving part and said driven part, said sealing boot assembly includes a sealing boot, means for fixing said sealing boot to said driving part and said driven part at locations spaced axially from said inner and outer joint members, wherein the improvement

comprises that said sealing boot assembly spans said universal joint from said driving part to said driven part and includes a ring separate from and extending circumferentially around the outer spherical surface of said outer joint member with the inner surface of said ring being cylindrically shaped and in





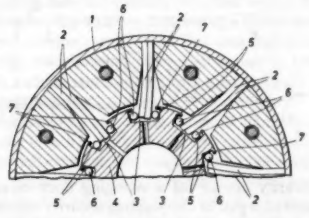
surface contact with and guided on the outer surface of said outer joint member so that the outer surface of said outer joint member is slidably movable relative to the inner surface of said ring, and said sealing boot being secured to the outer surface of said ring so that the axial extending parts thereof between said ring and said driving point and driven part being free.

4,262,499

TORSIONALLY ELASTIC VIBRATION-DAMPING MECHANISM

Peter Pfeifer, Mattsee, Austria, assignor to Dr. Ing. Geislinger & Co. Schwingungstechnik Gesellschaft m.b.H., Salzburg, Austria

Filed Mar. 15, 1979, Ser. No. 21,242
Claims priority, application Austria, Mar. 22, 1978, 2022/78
Int. Cl.[3] F16D *3/14*
U.S. Cl. 64—27 L **7 Claims**



1. A torsionally elastic, vibration-damping mechanism comprising

(a) an annular outer member,

(b) an inner member surrounded by the outer member, the inner member having a peripheral surface facing the outer member and defining a plurality of grooves, each of the grooves having two longitudinally extending side faces facing each other and extending inwardly from respective edges at the peripheral surface,

(b) a like plurality of torque-transmitting leaf springs extending generally radially between the outer and inner members, one end of each leaf spring being gripped in the outer member and an opposite end thereof being freely received in a respective one of the grooves, and

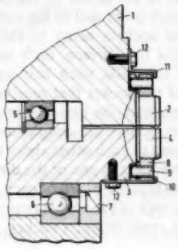
(c) at least one rolling element disposed between the opposite free end of the leaf spring and at least one side face in the respective groove, the rolling element being in rolling contact with the side face and the leaf spring end.

4,262,500

OVERLOAD CONTROL DEVICE BETWEEN TWO REVOLVING MACHINE PARTS

Karl Grimpe, Mülheim, Fed. Rep. of Germany, assignor to Mannesmann Demag Ag, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,142
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814180
Int. Cl.[3] F16D *3/56, 7/00*
U.S. Cl. 64—28 R **8 Claims**



1. Overload control apparatus for use between two revolving parts, comprising

(a) a first machine part having an end face;

(b) a second machine part having an end face;

(c) at least one first semi-cylindrical lug extending from said end face of said first machine part;

(d) at least one second semi-cylindrical lug extending from said end face of said second machine part, the number of said second semi-cylindrical lugs being equal to the number of said first semi-cylindrical lugs;

(e) each one of said first semi-cylindrical lugs cooperating with one of said second semi-cylindrical lugs to form a cylinder;

(f) an annular power-transmitting carrier link formed of a strong rigid material embracing each of said formed cylinders under an initial stress;

(g) said first machine part is a shaft;

(h) said second machine part is a hub concentric with said shaft; and

(i) said cylinders formed by said first and second semi-cylindrical lugs extend axially from said end faces of said shaft and hub.

4,262,501

TORQUE CONTROL INSTALLATION AND REMOVAL TOOL

John P. Vaughn, Northridge, and Charles W. Reynolds, Redondo Beach, both of Calif., assignors to VSI Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 787,466, Apr. 14, 1977, abandoned. This application Oct. 19, 1978, Ser. No. 952,785
Int. Cl.[3] F16D *7/06*
U.S. Cl. 64—29 **8 Claims**

1. In a torque control tool for setting and removing fasteners and the like, the tool having an axis of rotation, an improvement comprising:

(a) a drive section including:

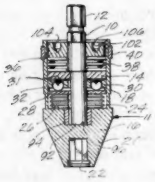
(i) a stem having a longitudinal rotational axis concentric with the axis of rotation;

(ii) a clutch plate having a flat surface extending radially of the longitudinal axis of the stem; and

(iii) means coupling the clutch plate and the stem for rotation together and permitting relative longitudinal movement between the clutch plate and the stem along the longitudinal axis of the stem;

(b) a driven section including a housing receiving the stem and the clutch plate, the stem being journaled for rotation in the housing about the axis of rotation of the tool in both rotational directions, the stem being supported by the housing against relative longitudinal movement between the two, the housing having threads;

(c) ball and spherical socket means normally coupling the drive and driven section together for rotation about the axis of rotation of the tool by resisting torques about such axis tending to uncouple the two sections, the clutch plate being included in such means, the ball and socket means including a plurality of spherical sockets and a plurality of balls, the radius of curvature of the balls being substantially equal to each other and to the radius of curvature of the sockets, the sockets being in the clutch plate and opening onto the flat surface, each socket normally receiving one of the balls, each ball normally interfering with the wall of the socket that receives it in each direction of rotation about the axis of the tool such that the drive and driven sections are coupled together and cannot rotate with respect to each other about the axis of the tool, the wall of each socket in one of the directions of rotation being relieved so that the depth of each socket at the relief is less than the depth of the socket opposite the relief, each relief defining a ramp from its socket, a step existing between each socket and its associated relief, and a step existing between each socket and the flat surface of the clutch plate on the side of such socket opposite its relief, the interference of each ball with the wall of the socket receiving such ball on the relief side thereof being substantial but distinctly less than the interference of such ball with the wall of the socket opposite the relief, whereby the balls unseat from the sockets and get out of interference with the wall of the sockets at an uncoupling torque applied to the balls about the rotational axis of the tool that is distinctly less on the relieved side of the socket than on the opposite side of the socket, and the drive and driven sections can only rotate with respect to each other about the rotational axis of the tool when the balls are out of the sockets;



(d) a carrier plate coupled to the housing to transmit torque thereto and for relative movement between the two along the longitudinal axis of the stem without relative rotation between the two, the carrier plate having seats for the balls of the ball and socket means so that torque applied on the balls is transmitted to the housing;

(e) means including spring means for applying an axial force on the ball and socket means to tend to force the balls into the sockets and to thereby determine the uncoupling torques; and

(f) an adjustment cap threaded into the threads of the housing and acting on the spring means by varying the amount of stress in the spring means by the position of the cap in the threads of the housing, the ball and socket means being interposed between the adjustment cap and the spring means.

4,262,502

SLIDER WITH LOCK FOR A SLIDE FASTENER

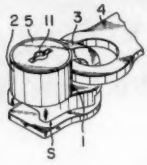
Kiyoshi Oda, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,540

Claims priority, application Japan, May 26, 1978, 53-72097[U]

Int. Cl.³ E05B 67/38

U.S. Cl. 70—68 **5 Claims**



1. A slider with lock for a slide fastener which comprises

(a) a cylindrical housing integrally fixed on the upper wing of the slider body and provided with a sloped cam face on the inner surface thereof,

(b) a rotor coaxially installed within the housing, capable of being turned with a key and capable of moving in the axial direction when rotated, being guided by the sloped cam face on the inner surface of the housing,

(c) a locking member with a lock claw directed toward the element rows of the slide fastener and engaged with the rotor so as to be moved in the axial direction of the rotor by the axial movement of the rotor,

(d) a spring interposed between the rotor and the lockign member so that the locking member is always urged toward the element rows, and

(e) a cover.

4,262,503

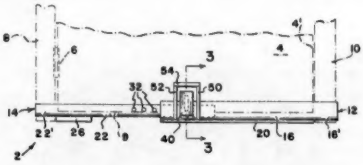
DOOR SECURITY DEVICE

James F. Kuebler, South Trail, Lake Mohawk, Tiffin, Ohio 44883

Filed Dec. 20, 1978, Ser. No. 971,555

Int. Cl.³ E05B 65/06

U.S. Cl. 70—101 **12 Claims**



1. A security device for a swinging door comprising the combination of, a pair of cooperating security members each of which comprises a pair of generally parallel laterally spaced elongated members adapted to be positioned on opposite sides of a door and interconnecting means rigidly secured to its associated pair of elongated members, said interconnecting means being adapted to slide beneath a door when the door is partially or fully opened and interconnecting their respective associated elongated members on opposite sides of the doors when the door is closed, said elongated members in each pair having first end portions dimensioned to be telescopically engaged with each other whereby the overall length of the security device may be adjusted, each of said elongated members having second end portions opposite said first end portions which extends beyond their associated interconnecting means and is adapted to extend beyond the vertical edge of the

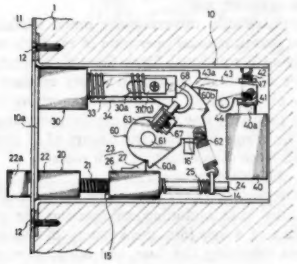
door along an adjacent frame or wall structure, whereby said members form a rigid telescopic structure along the sides of the door in the zone into which the door swings when the door is being opened, and means for releasably retaining said members any of a plurality of selected adjusted telescopic relative positions with said second end portions adjacent the frame of the door, whereby said pair of members limit relative movement between a door and its frame to secure the door from being opened.

4,262,504

LOCKING DEVICE

Akihiko Inoue, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1977, Ser. No. 857,252
Claims priority, application Japan, Dec. 3, 1976, 51-145459
Int. Cl.[3] E05B *55/00*
U.S. Cl. 70—151 R **9 Claims**



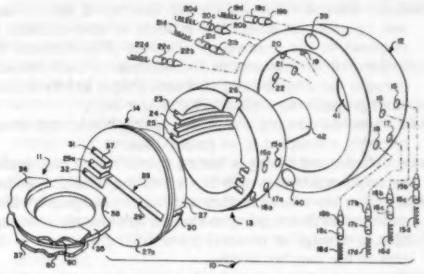
1. A locking device for a door or the like, comprising:
(a) a housing;
(b) a bolt supported for movement between a retracted position wherein said bolt is fully within said housing and a locking position wherein said bolt is partially outside said housing;
(c) an actuating member slidably mounted within said housing, said actuating member comprising a first cam member on an end portion thereof, said first cam member extending outside said housing when said actuating member is partially outside said housing, and a second cam member within said housing;
(d) means operatively associated with said actuating member for biasing it into a position wherein said actuating member is partially outside said housing when the door is open;
(e) means operatively inter-relating said bolt and said actuating member for moving said bolt into its locking position when said actuating member is moved into a position substantially within said housing, said means inter-relating said bolt and said actuating member including a rotary cam connected at one end portion to said bolt and actuated rotatably by said second cam member when said first cam member is pressed inwardly upon a closing of the door, said actuation of said rotary cam adapted to move said bolt into its locking position.
(f) an electromagnetically actuated plunger within said housing; and
(g) means operatively associated with said plunger for retracting said bolt from said locking position upon electromagnetic actuations of said plunger.

4,262,505

HEMISPHERICAL LOCK CYLINDER

Anthony Moscatelli, c/o Big Key Corp., 239 N. Queens Ave., Massapequa, N.Y. 11758

Filed May 31, 1979, Ser. No. 44,796
Int. Cl.[3] E05B *27/00*
U.S. Cl. 70—358 **5 Claims**



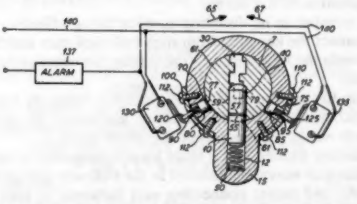
1. A hemispherical lock cylinder comprising a hemispherical shell, a hemispherical plug received in the hemispherical shell, the interface of the shell and the plug constituting a shearline, a plurality of radial pin chambers formed in the shell and in the plug, each of the pin chambers in the shell being aligned with a respective pin chamber in the plug, an outer pin having an outer end portion thereof in each of the respective pin chambers in the shell, respective spring means urging each said outer pin inwardly, an inner pin having an inner end portion thereof in each of the respective pin chambers in the plug, the inner end of each of the outer pins abutting against the outer end of each of the respective inner pins within the respective plug pin chambers for the latter, each of the outer pins traversing the shearline and, thus, blocking rotation of the plug within the cylinder, and a keyway formed in the plug having outer boundaries intersecting the inner ends of the respective plug pin chambers, the keyway being adapted to receive a key having cuts so dimensioned as to move and hold each inner pin outwardly so that the abutment of each inner pin with the respective outer pin coincides with the shearline whereby the plug is rotatable in the shell by means of the key thereby to open or close a lock to which the plug is operatively connected.

4,262,506

CYLINDER LOCK WITH WARNING OF ENTRY AND DRILLING ATTEMPTS

Helmut Töbel, Hameln, Fed. Rep. of Germany, assignor to Zeiss Ikon Ag Goerzwerk, Fed. Rep. of Germany

Filed Apr. 24, 1978, Ser. No. 883,400
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708141
Int. Cl.[3] E05B *63/00*
U.S. Cl. 70—419 **9 Claims**



1. An improved lock comprising a housing having a cylinder rotatably mounted therein;

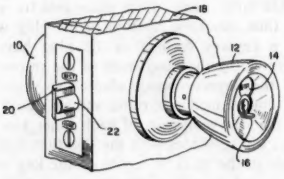
said cylinder containing a key slot;
said housing containing spring biased means for locking operable to engage a cylinder bore in said cylinder and block said cylinder from rotating;
said spring biased means for locking being operable to be disengaged from said cylinder bore under the action of a key inserted into said key slot; the improvement comprising,
radially oriented means for sensing, mounted in said housing and operable to detect the rotation of said cylinder in response to the removal of elements of said means for locking or in response to the rotation of said cylinder brought about by an entry tool not a proper key by sensing an improper void within said cylinder bore,
said means for sensing comprising spring-biased trip means operably connected to an external alarm;
said cylinder containing a boring therethrough engageable by said tumbler means to block rotation of said cylinder;
said boring containing further a cylinder pin against which said tumbler means bears and which cylinder pin is susceptible to damage or removal upon drilling attempts in the area of the tumbler means;
said trip means being operable to detect the rotation of said cylinder upon drilling attempts to permit said trip means to enter said boring when said cylinder has been rotated to align said boring with said trip means.

4,262,507

CYLINDER LOCK WITH HOTEL FUNCTION

Max L. Flack, Noblesville, and William G. Roos, Indianapolis, both of Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Dec. 26, 1978, Ser. No. 972,977
Int. Cl.[2] E05B *41/00*
U.S. Cl. 70—432 **9 Claims**



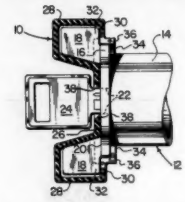
1. Apparatus for providing hotel function in a cylindrical lock having inner and outer knobs supported by knob sleeves on a lock chassis, and having a locking bolt, a key-removable lock core in the outer knob, and a key-actuated bolt roll-back cam for operation by the key plug of such core to retract the bolt, comprising
a throw member for connecting the key plug of the core to the key-actuated roll-back cam, said member being axially movable between operative and disabling positions, said member having means effective in its operative position to connect the key plug to the key-actuated roll-back cam for actuating such cam to retract the bolt in response to key operation of the core,
said member in its disabling position being effective to disconnect the key plug from such roll-back cam and thereby disable the lock core from actuating the cam to retract the bolt,
means for moving said throw member from its operative position to its disabling position, and means for actuating such means from adjacent the inside knob,
a slideway formed in the outer knob contiguous to the core,
an indicator movably mounted in the slideway alongside said core, and means connecting said indicator to said throw member for axial movement therewith so as to be moved to an indicating position when said throw member is moved to its disabling position.

4,262,508

THERMAL SHIELD WITH LOCK MECHANISM

Charlton R. Davidson, 2034 Caprock Dr., Richardson, Tex. 75080

Filed Mar. 9, 1978, Ser. No. 884,841
Int. Cl.[2] E05B *17/14*
U.S. Cl. 70—455 **12 Claims**



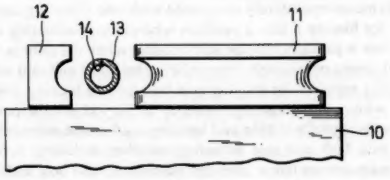
1. In combination:
A metal lock mechanism of the type having a lock cylinder terminating in a coaxially aligned disc-shaped face plate with outwardly extending wings generally orthogonally disposed in relation to an outer surface of the face plate, the face plate having a keyway centrally located between the wings permitting insertion of a key therethrough into the lock cylinder; and
a shield substantially covering the metal surfaces of the wings to permit manual operation of the lock mechanism by applying a rotational force thereto, whereby manual operative contact is limited to direct contact with the surfaces of the shield, the shield comprising a material having a relatively low thermal conductivity compared to that of the wings such that the fingers of an operator are protected from direct contact with metal;
wherein the shield comprises;
a base adapted to cover the outer surfaces of the face plate, the base including an opening for permitting insertion of a key into the keyway of the face plate, pockets adjoining the base and adapted to cover the wings, and means for securing the shield in place over the face plate and wings.

4,262,509

ARRANGEMENT FOR POSITIONING A WORKPIECE

Rigobert Schwarze, Olpener Strasse 460-474, 5000 Koeln 91, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,378
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832398
Int. Cl.[3] B21C *37/00*
U.S. Cl. 72—10 **26 Claims**



1. An arrangement for positioning a workpiece having a portion to be placed in a predetermined orientation relative to a work station, comprising means for displacing a workpiece so that said portion thereof moves along a predetermined trajectory; means for rotating the workpiece about an axis of rotation; and shut-down means including a sensing device and a switch device, said sensing device having at least one lever

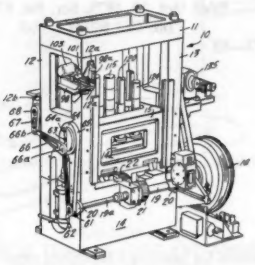
with one end portion provided with a detecting element adapted to detect said portion of the workpiece during the displacement of the workpiece and another end portion operatively connected to said switch device, said switch device being operatively connected to said displacing means for shutting down the same when said portion of the workpiece is in a desired predetermined orientation relative to the work station.

4,262,510

SUPPORT PEDESTALS

Robert J. Allen, Caly City, and Kurt L. Hahn, San Rafael, both of Calif., assignors to American Can Company, Greenwich, Conn.

Filed Jul. 11, 1979, Ser. No. 56,705
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—12 **10 Claims**



1. A system for distributing progressively formed articles by continuously maintaining a portion of each in a common plane including;

(a) a supply means for presenting individual sheets of thin stock to a first forming station each sheet positioned to be blanked and each station having a central axis about which said sheet is blanked and along which said sheet is drawn into the first stage of a semifinished article;

(b) a first support means axially aligned with said first station and spaced from said common plane the draw depth of said article for maintaining a portion of said article in said common plane;

(c) an advance mechanism positioned to work in a plane parallel to and near said common plane for movement to transfer the semifinished article from said first station to another forming station while maintaining a portion of the article in the common plane;

(d) another support means opposite said another forming station and spaced apart from said common plane the depth of said article draw therein to maintain a portion of said article in said common plane;

(e) further support means similarly associated repsectively with further forming stations to which said advance mechanism progressively transfers semifinished articles and each further means adapted to maintain a portion of its respective formed article in the common plane.

4,262,511

PROCESS FOR AUTOMATICALLY CONTROLLING THE SHAPE OF SHEET METAL PRODUCED IN A ROLLING MILL

Jean Boisvert, Trois-Rivieres, Canada; Bobby J. Bond, Muscle Shoals, Ala., and Floyd B. McCoy, Jr., Richmond, Va., assignors to Reycan Research Limited, Ontario, Canada

Filed Sep. 8, 1978, Ser. No. 940,651
Int. Cl.³ B21B *37/04, 27/06*
U.S. Cl. 72—17 **5 Claims**

1. Apparatus for controlling the shape of sheet metal produced in a rolling mill, said apparatus receiving a plurality of output signals from a sensor disposed across the width of said metal sheet, said sensor having a plurality of individual sensing means disposed at different locations across said width, a different one of said plurality of signals being associated with a different one of said individual sending means;

said apparatus comprising:

averaging means;

predetermined ones of said plurality of signals being fed to said averaging means, whereby the average of said predetermined ones of said plurality of signals is produced at the output of said averaging means;

first comparator means;

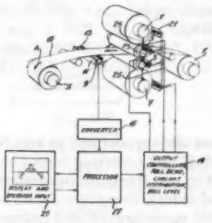
the output of said averaging means being fed to one input terminal of said first comparator means;

predetermined other ones of said plurality of signals or other averages being fed to the other input terminal of said first comparator means;

the output of said first comparator means being fed to means for controlling a parameter of said rolling mill;

whereby, when said first comparator means detects a difference, greater than a predetermined difference, between the inputs thereof, said parameter will be appropriately controlled;

said sensor comprising a shapemeter having a plurality of



segments, a different one of said segments of said shapemeter being associated with a different one of said plurality of signals;

said plurality of signals comprising electrical signal levels;

said averaging means comprising electronic averaging means;

said first comparator means comprising electronic comparator means;

said averaging means comprising two averagers;

the signals from the segments on the right hand side of the sheet being fed to one of said averagers;

the signals from the segments on the left hand side of the sheet being fed to the other averager;

the output of said one averager being fed to one input terminal of said first comparator means;

the output of said other averager being fed to another input terminal of said first comparator means;

the output of said first comparator means being fed to a roll level controller;

whereby when the inputs to the first comparator means comprises a difference of or greater than a predetermined amount, the level controller will control the roll level means to operate to eliminate the difference.

4,262,512

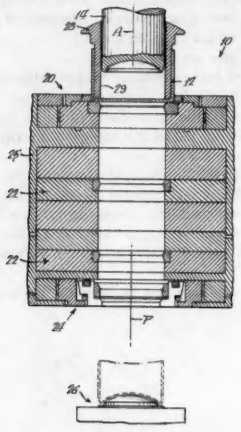
DRAWING AND IRONING ASSEMBLY FOR BODYMAKER

Edward G. Maeder, Minnetonka, Minn., assignor to National Can Corporation, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,272
Int. Cl.³ B21B *45/02*
U.S. Cl. 72—45 **10 Claims**

1. In a drawing and ironing machine including a frame having a redraw die assembly, at least one ironing assembly and a stripper assembly arranged in series and each having an opening to define a path with a punch movable along said path

through said openings, the improvement of said redraw die assembly including a redraw ring having an opening, a support surrounding and supporting said ring, a nesting ring carried by said support and having an enlarged opening surrounding said opening in said redraw ring for aligning a cup with said redraw ring, lubricating means for supplying lubricant between said



nesting ring and said support into an area between said cup and said redraw ring, and centering means surrounding said support and fixed to said frame for maintaining the center of said opening in said redraw ring aligned with said path and accommodating radial movement of said redraw ring to accommodate misalignment of the axis of said punch with respect to said path.

4,262,513

CONTINUOUS EXTRUSION OF METALS

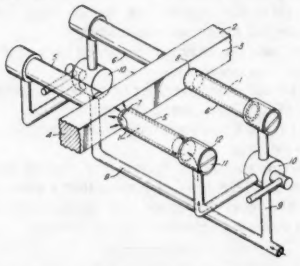
Stanley W. Pigott, Haywards Heath, England, assignor to BICC Limited, London, England

Filed Jul. 30, 1979, Ser. No. 61,996

Claims priority, application United Kingdom, Oct. 27, 1978, 42280/78

Int. Cl.³ B21C *23/32*

U.S. Cl. 72—45 **3 Claims**



1. A process of continuously extruding rod feedstock through a die orifice comprising the steps of gripping two opposed sides of the feedstock to a pressure greater than the yield strength of the material, lubricating the ungripped surfaces, providing opposed constraining walls and a stop at one end thereof, moving the feedstock in the gripped condition between the opposed walls to the stop where the feedstock upsets against the stop and constraining walls to pass out through the die orifice near the stop wherein the ungripped surfaces are lubricated by applying a fusible solid lubricant to each of them by supporting a respective stick of the lubricant in a cylinder having an open end facing the ungripped surface in which cylinder the stick is a loose sliding fit and introducing compressed gas into the cylinder to apply a substantially constant biassing force urging the stick into engagement with the ungripped surface and at the same time to cool the stick of lubricant to inhibit melting.

4,262,514

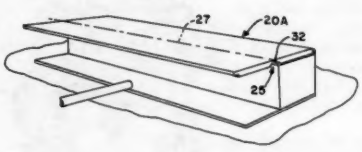
METHOD AND APPARATUS FOR BENDING A LAMINATED PANEL

Norbert C. Howell, Connersville, and Walter Tischuk, Richmond, both of Ind., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Oct. 22, 1979, Ser. No. 87,445

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—55 **20 Claims**



1. Apparatus for bending a laminated panel about at least one intended bend line, wherein said panel includes a deformable skin, a backing adhered to said skin, and at least one notch formed in said backing, said notch having a bottom adjacent to said skin and parallel with said bend line, said panel having first and second panel portions on opposite sides of said bend line, said apparatus comprising:

a base;

a forming edge extending along and being at least coextensive with said bend line;

support means supporting said forming edge and said panel spaced-apart from said base;

retaining means retaining said panel engaged with said forming edge;

a substantially air-impervious membrane covering said panel and cooperating with said base to provide a chamber; and

means establishing a pressure within said chamber which is less than the pressure outside said chamber, whereby the pressure outside of said chamber forces said panel to bend about said forming edge thereby to place said panel portions in angular relation relative to each other.

4,262,515

METHOD AND APPARATUS FOR BENDING A TUBE

Arno Frei, Seuzach, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 14, 1978, Ser. No. 969,478

Claims priority, application Switzerland, Dec. 21, 1977, 15868/77

Int. Cl.³ B21D *11/06, 3/00*

U.S. Cl. 72—302 **10 Claims**

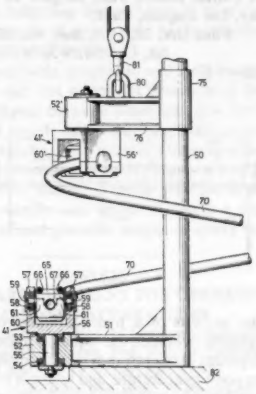
1. A method of bending a tube comprising the steps of

winding a tube into either a circle or a helix of small pitch;

clamping the tube at two preselected positions to prevent rotation of the tube about the axis of the tube; and

thereafter pulling the tube apart in a direction parallel to a central axis of said circle or helix while permitting said positions to move in space and pivot to effect an imposi-

tion of forces in the direction of said central axis to cause a relative displacement of said positions to form a permanently deformed coil having a steep pitch of from 15° to 75°.



4,262,516

PIERCED METAL TUBE BLANKS AND METHODS OF MAKING SUCH BLANKS

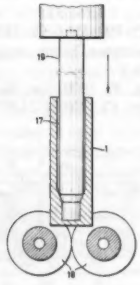
Frank Weber; Erwin Jericho, both of Sulzbach-Rosenberg, and Werner Friedrichs, Amberg, all of Fed. Rep. of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte, Sulzbach-Rosenberg, Fed. Rep. of Germany

Division of Ser. No. 766,284, Feb. 7, 1977. This application Nov. 3, 1978, Ser. No. 957,611

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1976, 2605236

Int. Cl.[3] **B21B** *17/08;* **B21C** *23/18;* **B21D** *22/26*

U.S. Cl. 72—348 **1 Claim**



1. A method of making a seamless tube comprising the steps of:

placing a heated metal billet of square uniform cross section in a substantially cylindrical piercing mold of uniform inner diameter;

piercing said billet by pressing a first stepped mandrel axially into said billet in said mould; and

pressing metal of said billet radially outwards into contact with said mould as said mandrel is pressed into said billet whereby a pierced metal blank having an annular cross section of uniform outer diameter is formed including a peripheral wall defining a bore, there being an opening at one end of said bore and wall means closing an opposite end of said bore, the portion of said peripheral wall adjacent said opening being of larger diameter and smaller radial thickness and the portion of said peripheral wall adjacent said wall means closing the opposite end of said bore being of smaller diameter and larger radial thickness, and there being a conical transition between said portion of larger diameter and said portion of smaller diameter; and

said method comprising further the step of mounting said pierced metal blank on a second stepped mandrel and drawing said pierced metal blank by means of said second mandrel through tube forming means to form said tube, said second mandrel which is stepped having an end portion with a diameter corresponding to said portion of smaller diameter, fitted against said portion of smaller diameter and a portion of said conical transition but not against said portion of larger diameter when said pierced blank is mounted on said second mandrel for drawing the same to form said tube.

4,262,517

METHOD OF CORRECTING DISTORTED PIPE END

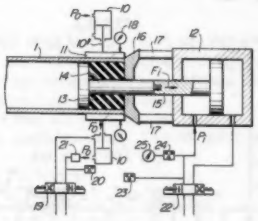
Hideaki Kamohara; Yuji Yoshitomi, both of Kudamatsu; Takaichi Koyama, and Yasumasa Tamai, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1979, Ser. No. 63,449

Claims priority, application Japan, Aug. 7, 1978, 53-95468

Int. Cl.[3] **B21D** *47/02;* **B21C** *3/12*

U.S. Cl. 72—370 **5 Claims**



1. A method of correcting a distorted end of a pipe to an original substantially true circular cross-section, the method comprising the steps of: applying, in at least two radial directions, external loads to the outer peripheral surface of the pipe adjacent to said end to elastically and plastically deform said pipe end into a substantially true circular cross-section; maintaining this substantially true circular cross-section while applying an internal pressure to the inner peripheral surface of the pipe end until a circumferential stress produced in said pipe adjacent said end is increased up to a value which is at least equal to the yield stress of said pipe; and thereafter removing said internal pressure.

4,262,518

TUBE EXPANDER AND METHOD

Todd D. Creger, Peoria; Steven R. Nelson, Dunlap, and Paul L. Wright, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 16, 1979, Ser. No. 58,058

Int. Cl.[3] **B21D** *41/02*

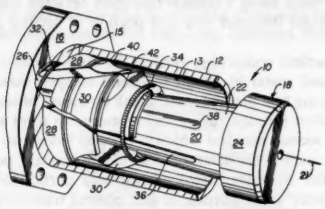
U.S. Cl. 72—393 **5 Claims**

1. A method of expanding a workpiece (**12**) having a bore (**13**) therein comprising:

Step (a) inserting a tube expander (**10**) having first and second forming members (**28,30**) into the bore (**13**) of the workpiece (**12**) with the first and second forming members (**28,30**) being slidably disposed in an axially offset, reduced diameter condition on a tapered mandrel (**20**);

Step (b) urging the first and second forming members (**28,30**) into an axially aligned, enlarged diameter condition in

mating contact with the mandrel (**20**) and providing a continuous annular forming surface (**40,42**); and



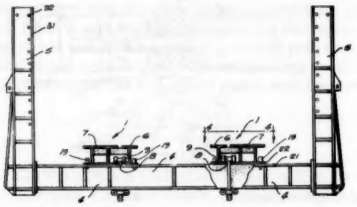
Step (c) axially moving the forming members (**28,30**) within the bore (**13**).

4,262,519

VEHICLE FRAME ALIGNMENT APPARATUS

James H. Mason, Narrabeen, Australia, assignor to Applied Power Inc., Brookfield, Wis.

Filed Nov. 16, 1978, Ser. No. 961,430
Claims priority, application Australia, Oct. 10, 1978, PD6319
Int. Cl.³ B21D *1/14*
U.S. Cl. 72—457 **13 Claims**



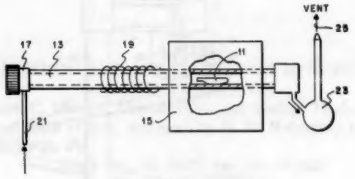
1. A vehicle frame alignment apparatus comprising a pair of substantially parallel tracks upon which a vehicle may rest, at least one transversely extending beam suspended beneath said tracks, said beam being longer than the spacing between said tracks and having an upright pillar at each end thereof, said pillars being respectively on opposite sides of said pair of tracks and provided with anchorage means for attachment of straining members for applying a plurality of variously directed loads to said vehicle, said beam being suspended beneath said tracks by a pair of suspension units, each suspension unit comprising a top and bottom carriage each having rollers and mutually interconnected by a substantially vertical shaft so as to be relatively rotatable about the axis of said shaft, each of said tracks having fixedly associated and extending substantially parallel therewith a pair of longitudinally extending track rails spaced one from the other along which the rollers of said top carriage ride, said transverse beam having fixedly associated and extending substantially parallel therewith a pair of longitudinally extending beam rails spaced one from the other and bearing upon the rollers of said bottom carriage over which said beam rails ride, the rollers of said top carriage supporting said beam for movement longitudinally of said tracks, the rollers of said bottom carriage supporting said beam for transverse movement relative to said tracks, the rotational mounting of said carriages permitting the beam to pivot in a generally horizontal plane as the opposite ends of said beam are moved to different relative positions along said tracks, and locking means for locking said beams in each of said positions.

4,262,520

SUPPLEMENTAL WEIGHT PERCENT ANALYSIS FOR CHROMATOGRAPHY

Robert D. Coffee, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1979, Ser. No. 107,952
Int. Cl.³ G01N *5/04*
U.S. Cl. 73—1 G **5 Claims**



1. In the analysis of a hydrocarbonaceous liquid by gas chromatography wherein the liquid is raised to a predetermined equipment temperature which is equated to a maximum test boiling point temperature, and wherein said hydrocarbonaceous liquid has a high boiling point portion that is not measured during the chromatographic analysis, a method of determining the weight fraction of said high boiling point portion in said hydrocarbonaceous liquid comprising:

(a) weighing a test sample of said hydrocarbonaceous liquid;

(b) heating said weighed test sample while flowing an inert gas past said weighed test sample to said predetermined equipment temperature,

(c) continuing said inert gas flow for at least 8 minutes after said predetermined equipment temperature is reached, thereby creating a residual portion of said weighed test sample; and

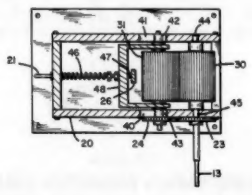
(d) weighing said residual portion and determining the ratio of the weight of said residual portion to the weight of said weighed test sample, thereby determining the weight fraction of said hydrocarbonaceous liquid that is not measured in said chromatographic analysis.

4,262,521

EPOXY RESIN GEL TESTER

Ronald A. Beck, Bloomington, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,181
Int. Cl.³ G01N *25/02*
U.S. Cl. 73—17 R **8 Claims**



1. Apparatus for measuring the gel point of a granular sample of epoxy resin, comprising:

a sample tube of thin metal to hold said granular sample of epoxy resin;

an environmental chamber capable of maintaining its interior at a predetermined temperature and having a sample entry orifice;

a test pressure sensor assembly located within said environmental chamber, which test pressure sensor assembly receives said sample tube containing said granular sample of epoxy resin and applies over time a pressure thereto that will cause a lesser or greater deformation of said

sample tube dependent upon whether said epoxy resin contained therein is in a granular state or is in a plastic state, and which senses that said granular sample of epoxy resin has entered a plastic state;

a first switch for indicating that said sample tube containing said granular sample of epoxy resin has been inserted into said sample entry orifice; and

a controller responsively coupled to said test pressure sensor assembly and said first switch for determining the length of time that elapses between when said first switch indicates that said sample tube containing said granular sample of epoxy resin has been inserted into said sample entry orifice and when said test pressure sensor assembly senses that said granular sample of epoxy resin has entered said plastic state whereby said length of time is a measure of the gel point of said granular sample of epoxy resin.

4,262,522
METHOD AND ARRANGEMENT FOR OPERATING GAS EXAMINING APPARATUSES

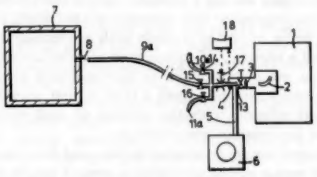
Günter Reich, Cologne, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 25, 1979, Ser. No. 33,337

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827537

Int. Cl.³ G01N *1/26*

U.S. Cl. 73—23 **12 Claims**



1. In a method of operating a gas examining apparatus including a gas examining means; a chamber communicating with the gas examining means, a gas pump communicating with the chamber; and probe hoses of given length values and quantity values adapted to communicate with the chamber for introducing into the apparatus gas to be examined; said chamber being arranged upstream of said gas examining means as viewed in the direction of gas flow; the method including, in a measuring operation, the step of selectively using probe hoses differing from one another at least in one of said values; the improvement comprising the step of maintaining the pressure in said chamber constant independently from the different values of the selectively used probe hoses; said step of maintaining said pressure constant comprising the step of so selecting the diameter of the selectively used probe hoses that said pressure remains constant.

4,262,523
MEASUREMENT OF FLUID DENSITY

James W. Stansfeld, Beech, near Alton, England, assignor to The Solartron Electronic Group Limited, Farnborough-Hampshire, England

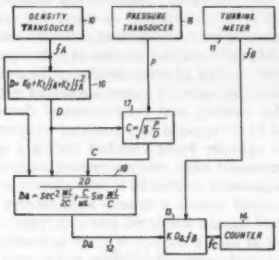
Filed Nov. 22, 1978, Ser. No. 962,864

Claims priority, application United Kingdom, Dec. 9, 1977, 51409/77

Int. Cl.³ G01N *9/00*

U.S. Cl. 73—30 **18 Claims**

1. A fluid density measuring apparatus, comprising a vibrating fluid density transducer providing, in operation, a first signal whose frequency is dependent upon the density of the fluid, means providing, in operation, a second signal dependent upon the velocity of sound in the fluid, wherein the means providing the second signal are means which measure the velocity of sound in the fluid, and computing means responsive to the two signals to compute the density of the fluid from



the first signal in accordance with a formula characteristic of the density transducer, subject to a non-linear correction dependent upon the second signal and such as to improve the accuracy of the density measurement.

4,262,524
INSTRUMENT FOR MEASURING SPONTANEOUS IGNITION IN AN INTERNAL COMBUSTION ENGINE

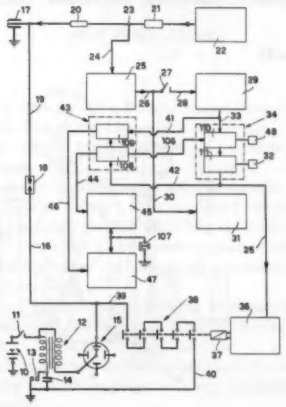
Luigi Russo, and Luciano Spaggiari, both of Milan, Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Dec. 13, 1979, Ser. No. 103,115

Claims priority, application Italy, Dec. 18, 1978, 30970 A/78

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **4 Claims**



1. An instrument for measuring spontaneous ignition in a cylinder of an internal combustion engine provided with an ignition system arranged to generate high voltage to be fed intermittently to a sparking plug housed in said cylinder in order to generate mixture ignition sparks for effecting the so-called active cycles of the cylinder being checked, means being provided for blocking the intermittent application of said high voltage to the sparking plug in order to effect the so-called passive cycles of the cylinder being checked, there being connected to said sparking plug a direct current medium voltage generator for supplying the sparking plug, which then

allows current to pass each time the gas present between its electrodes is ionized as a result of mixture combustion, there being provided means for detecting said current transmissions, adaptor means for transforming the detected current transmissions into corresponding pulses of predetermined form and amplitude, a control circuit for receiving said pulses and arranged to deliver at each predetermined number thereof a control signal of predetermined duration for said blocking means, first selector means associated with said control circuit for causing said predetermined number of pulses to correspond with a required number of active cycles of the cylinder being checked, and second selector means associated with said control circuit for causing said predetermined duration of the control signal to correspond to a required number of passive cycles of the cylinder being checked during a spontaneous ignition measurement stage, said instrument comprising a logic gate unit operationally connected to said adaptor means and to said control circuit in such a manner as to receive said pulses and said control signals, said logic gate unit responding to said control signals in such a manner as to be activated to operate for their entire predetermined duration, and to emit for each of them a first counting signal which indicates that one spontaneous ignition measurement stage has been effected, and also responding to each set of pulses received during its activation periods in such a manner as to emit a second counting signal which indicates the existence of spontaneous ignition during a measurement stage, there being associated with said logic gate unit first counter means able to total said first counting signals in order to provide an indication of the number of measurement stages effected, and second counter means able to total said second counting signals in order to provide an indication of the number of measurement stages in which spontaneous ignition has occurred.

4,262,525

HARDNESS TESTING APPARATUS PROVIDED WITH A SAFETY STOP DEVICE

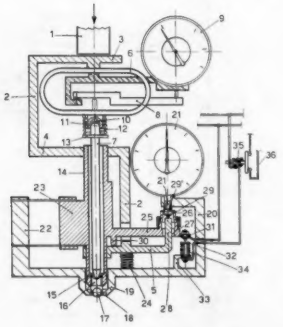
Alfred Ernst, Via San Martino, 6, Vezia Ticino, Switzerland

Filed Dec. 6, 1979, Ser. No. 101,749

Claims priority, application Switzerland, Dec. 15, 1978, 12805/78

Int. Cl.³ G01N *3/44*

U.S. Cl. 73—81 **3 Claims**



1. Hardness testing apparatus operating with a preload and a main load, wherein an indentor moves relative to a reference plane which normally abuts on the surface of the workpiece to be tested, and wherein the approaching operations of the indentor to the workpiece and the preload and main load applications are executed automatically by means of a thrust member, comprising a member able to send a signal to stop the testing cycle at any moment before the main load application, to prevent the application of the foreseen whole load composed of the preload and main load, when the indentor fails to meet any appreciable resistance, as in the case of a hand accidentally inserted by the operator under the indentor, or because of an anomalous position of the workpiece to be tested, so that the indentor projects beyond the reference plane at a rate greater than the maximum projection foreseen in normal operation.

4,262,526

ROTATIONAL POSITION DETECTING APPARATUS

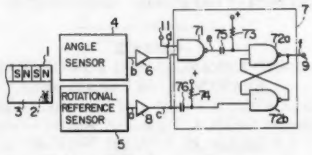
Kunio Makita, Chiryu, and Masahiro Sato, Toyoake, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 26, 1979, Ser. No. 52,213

Claims priority, application Japan, Jul. 21, 1978, 53-89692; Jul. 24, 1978, 53-90089

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **2 Claims**



1. A rotational position detecting apparatus for an internal combustion engine having a rotatable output shaft comprising:

disk means coupled to said rotatable output shaft, said disk means being provided thereon with a reference information and a plurality of equi-spaced angular informations;

first sensor means positioned to face said disk means, said first sensor means providing a train of first output signals in timed relation with the passing of said equi-spaced angular information therethrough;

second sensor means positioned to face said disk means, said second sensor means providing a second output signal in timed relation with the passing of said reference information therethrough;

first reshaper means connected to said first sensor means for reshaping said first output signals into a train of first pulse signals;

second reshaper means connected to said second sensor means for reshaping said second output signal into a second pulse signal;

gate means connected to said first reshaper means and said second reshaper means for gating said first pulse signals in response to said second pulse signal; and

bistable means connected to said second reshaper means and said gate means, said bistable means being driven into a first stable state at the output change in said first pulse signals by rise or fall thereof, said first pulse signals being passed through said gate means, and being driven into a second stable state at the output change in said second pulse signals, wherein the time position where the output of said bistable means changes to the first stable state defines a reference position, and a time position at the fall or rise of said first pulse signals, which fall or rise is opposite to the rise or fall of said first pulse signals to drive said bistable means, defines an angular position.

4,262,527

SELF-ADJUSTING ENGINE TIMING PICKUP PROBE

Donald D. Grover, Kenosha, Wis., and Jerome A. Thompson, Milford, Mich., assignors to Snap-On Tools Corporation, Kenosha, Wis.

Filed Oct. 15, 1979, Ser. No. 84,738

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **6 Claims**

1. A self-adjusting engine timing pickup probe adapted for mounting within a tubular engine mounting bracket having an exterior annular recess spaced from its free end, said probe

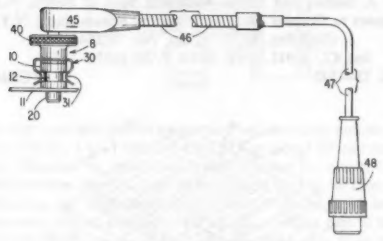
extending into proximity with an indicator on a rotating engine part to provide an air gap therebetween, comprising:

a tubular member adapted to be received within the engine mounting bracket, said tubular member having an external seat adapted to engage the free end of the mounting bracket;

an elongated sensor assembly extending through said tubular member and having relative axial movement therewith for manual adjustment to an initial air gap position which provides quality signals;

interference means between said tubular member and said sensor assembly establishing substantial resistance to relative axial movement; and

spring means secured to said tubular member and extending



into effective relation with the engine mounting bracket, said spring means having at least one cam surface which engages the engine mounting bracket and enters the annular recess, thereby urging said tubular member and said sensor assembly inwardly toward the rotating engine part, said spring means being sufficiently yieldable to permit said tubular member and sensor assembly to move outwardly without relative axial movement therebetween when said sensor assembly is engaged by the rotating engine part,

whereby said at least one cam surface cooperates with the mounting bracket to urge said tubular member and sensor assembly inwardly toward initial air gap position when so permitted by the rotating engine part, the probe thereby continuing to provide quality signals.

4,262,528

APPARATUS FOR MEASURING THE TORQUE APPLIED TO A WRENCH

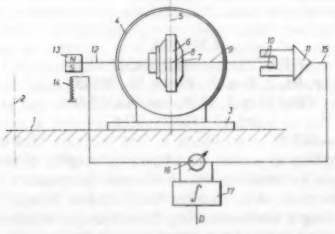
Johann-Peter Hölting, and Armin Rahn, both of Hamburg, Fed. Rep. of Germany, assignors to C. Plath KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 973,312, Dec. 26, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,749

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757948

Int. Cl.³ B25B *23/142*

U.S. Cl. 73—139 **5 Claims**



1. In a wrench-type hand tool, apparatus for indicating the magnitude of the tightening angle through which the tool is rotated about an axis through a workpiece when applying a torque to the workpiece, the apparatus comprising:

a gyroscope having a rotor defining a spin axis mounted upon the tool for rotation therewith, with the spin axis being oriented substantially transversely to the workpiece axis;

means for determining the magnitude of precession of the gyroscope rotor; and

means for indicating the magnitude of the tightening angle as a function of the time integral of the magnitude of precession.

4,262,529

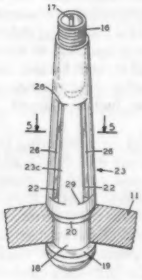
PRESSURE SENSITIVE INDICATING DEVICE

Aaron A. Rosenblatt, New York, and Walter J. Mann, Little Neck, both of N.Y., assignors to James C. Adkins, Chappaqua, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,092

Int. Cl.³ B60C *23/04*

U.S. Cl. 73—146.8 **3 Claims**



1. A valve stem or valve stem extension device for a pneumatic vehicle tire, or the like, which comprises

(a) a base suitable for attachment to a vehicle wheel or a valve stem,

(b) a stem body mounted in communication with fluid within the tire and including a relatively rigid tubular support,

(c) said stem body further including a tubular distensible member formed of a deformable elastomer having predetermined distension characteristics surrounding said tubular support,

(d) said distensible member forming an expandable liner of said stem body and being subjected to the pressure within the tire.

(e) said distensible member being confined against expansion in axially spaced regions and being expandable between said regions,

(f) axially extending cover means normally completely surrounding at least the expandable portion of the distensible member and extending axially beyond each end of said expandable portion,

(g) said cover means comprising a discontinuous generally tubular member displaceable by expansion of said distensible member,

(h) said cover means being fixed in relation to the stem body in limited areas and having at least one movable free edge,

(i) said movable free edge being displaceable by expansion of said distensible member to indicate pressure conditions in said tire.

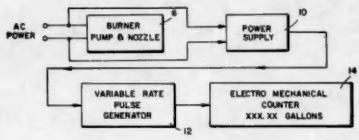
4,262,530
SYSTEM FOR MEASURING OIL CONSUMPTION

Arthur S. Gerquest, 334 Wire Mill Rd., Stamford, Conn. 06903

Continuation-in-part of Ser. No. 832,333, Sep. 12, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 957,133

Int. Cl.³ G01F *1/00*

U.S. Cl. 73—861.8 **4 Claims**



1. A meter for use in a fuel oil consumption metering system including a burner of a selectable fuel delivery rate, a delivery means for supplying fuel at a predetermined substantially constant rate to the burner adapted to consume the delivered fuel at said substantially constant rate, the delivery means being selectively operable during any of a plurality of successive time periods of operation, and power means coupled to the delivery means whereby the delivery means draws current during the selective operation of the delivery means, said meter comprising:

(a) measuring means comprising an adjustable pulse rate generator to accommodate the fuel delivery rate of the burner for electronically measuring any of said successive time periods, said measuring means coupled to said power means and being operable to measure the duration of the drawing of said current by said delivery means during any of said successive time periods so as to provide a time measure of the fuel consumed during operation of the burner; and

(b) registry means for registering the fuel consumed by the burner during said plurality of said successive time periods of operation, said registry, means being coupled to said measuring means to transfer from said measuring means to said registry means the time measure of the fuel consumed during operation of the burner, said registry means being adapted to accumulate said successive transferred time measures so as to provide a cumulative registry of the total fuel consumed during said time periods.

4,262,531
FLUID-GAUGING METHODS AND SYSTEMS

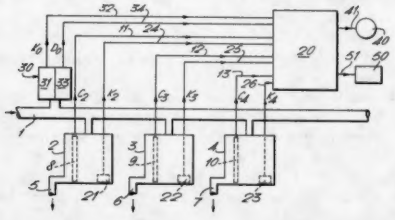
Martin Hewitt, Basingstoke, and David Sinclair, Camberley, both of England, assignors to Smiths Industries Limited, London, England

Filed Sep. 28, 1979, Ser. No. 79,868

Claims priority, application United Kingdom, Oct. 2, 1978, 38996/78

Int. Cl.³ G01F *23/26*

U.S. Cl. 73—304 C **14 Claims**



1. A fluid-gauging system of the kind for providing a representation of the mass of fluid present in a plurality of reservoirs, the system including means for providing a representation of the volume of fluid present in each said reservoir, first means associated with each said reservoir for providing a first representation of the density of fluid in each said reservoir, and means for deriving the mass of fluid from said volume representations and said density representations, the improvement wherein the system includes second means for providing a second representation of the density of fluid, said second representation being more accurate than said first representation, and means for modifying each said first representation in accordance with said second representation so as thereby to obtain a more accurate representation of the density of fluid in each said reservoir.

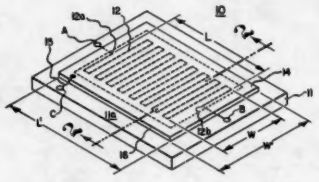
4,262,532
PRESSURE AND TEMPERATURE SENSOR

Walter J. Butler, and Miran Milkovic, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,254

Int. Cl.³ G01L *9/12*; G01K *7/22*; H01C *7/22*

U.S. Cl. 73—345 **9 Claims**



1. A sensor for simultaneously sensing temperature and pressure at a single location and in substantially non-interacting manner, comprising:

a substrate of an insulative material, said substrate having a surface;

a resistance member fabricated upon said substrate surface, said resistance member having first and second ends between which an electrical resistance is measurable;

a single flexible conductive electrode spaced from said resistance member and said substrate surface;

an insulative support rim extending from said substrate surface to the periphery of a surface of said conductive electrode nearest to said substrate, said substrate rim joined to said substrate surface and to only the periphery of said electrode to form a pressure-tight cavity enclosing said resistance member; and

a dielectric material enclosed within said cavity and at a reference pressure;

said resistance member being formed of a resistance material responsive to changes in external temperature for continuously varying the electrical resistance between said resistance member ends; said conductive electrode responsive to changes in external pressure for continuously varying the distributed electrical capacitance between said electrode and said resistance member.

4,262,533
HEATED LIQUID SAMPLER

Ben E. Jaeger, Rt. 2, Box 49, Plano, Ill. 60545

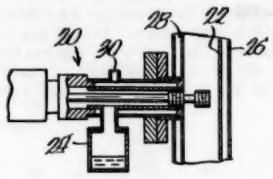
Filed May 3, 1979, Ser. No. 35,601

Int. Cl.³ G01N *1/14*

U.S. Cl. 73—422 TC **4 Claims**

1. A sampling apparatus for obtaining samples of product from a product containing vessel wherein the product is at a temperature other than ambient temperature, comprising a housing having a bore extending therethrough, wherein one end of said bore is for communication with the interior of the vessel; a plunger having a recess intermediate its ends; means for reciprocating said plunger in said bore to project said

recess from said one end of said bore and into the vessel to receive a sample of product therein and to then retract said recess from the vessel and to a point in said bore; means at said point in said bore for receiving the sample of product in said recess; means for maintaining a liquid seal between said one end of said bore and said point therein; and means for controlling the temperature of said housing to maintain the temperature of a product sampled within a selected temperature range, said means for controlling the temperature of said housing comprising jacket means around said housing forming a chamber between said jacket means and said housing, and means for introducing a heat transfer fluid at a selected temperature into said chamber in contact with said housing for controlling the temperature thereof, said jacket means having an inlet to said chamber for introduction of a heat transfer fluid into said chamber and an outlet from said chamber for exit of the heat transfer fluid, whereby heat transfer fluid may flow through said chamber to control the temperature of said housing, and including at least one fluid deflector in said chamber for controlling the flow of a heat transfer fluid therein to cause uniform contact of the heat transfer fluid with said housing.



4,262,534

LIQUID SAMPLING SYSTEM

Harold Morrison, 1406 Drexel Ave., N.E., Winter Haven, Fla. 33880

Filed May 29, 1979, Ser. No. 43,426
Int. Cl.³ B01L *3/02*; G01N *1/14*
U.S. Cl. 73—422 TC **5 Claims**

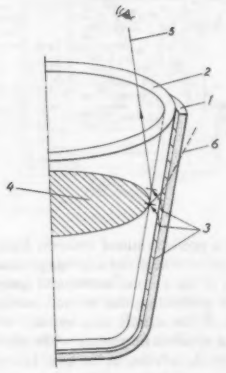
1. A liquid sampling apparatus, comprising: a main body having a passageway therethrough, said main body vertically attached to a horizontally extending liquid conducting conduit having an aperture, said conduit adapted for communication with a pipeline and furthermore adapted to receive the flow of a liquid passing through said pipeline, said main body passageway in liquid communication with said conduit through said aperture, a receptacle removably attached to said main body below said aperture and in liquid communication with said main body passageway, a plunger axially movable within said main body passageway, means on the main body for sealingly coacting with said plunger to selectively close liquid communication from said aperture to said receptacle,means for moveably operating said plunger in said passageway thereby positioning said plunger in said passageway for opening or closing liquid communication from said aperture to said receptacle.

4,262,535

APPARATUS FOR METERING OR DISTRIBUTING THE VOLUME OF LIQUIDS

Jan Andersson, Söderköping, Sweden, assignor to AB Industrifirman Skandia, Anderstorp, Sweden

PCT No. PCT/SE78/00011, § 371 Date Feb. 28, 1979, § 102(e) Date Feb. 13, 1979, PCT Pub. No. WO79/00019, PCT Pub. Date Jan. 11, 1979
This PCT application filed Feb. 13, 1979, Ser. No. 21,610
Int. Cl.³ G01F *23/02*
U.S. Cl. 73—428 **8 Claims**



1. An apparatus for metering liquids comprising:
an ungraduated dosage vessel for receiving the liquid and having bottom and side walls defining an upward opening mouth, at least one upwardly extending portion of a said side wall being transparent; and
means carrying a graduated scale arranged for coaction with said upwardly extending transparent portion of the dosage vessel, said graduated scale carrying means being placed outside said portion, said scale facing the dosage vessel and being separated from the outside of the dosage vessel portion by an air gap, light rays from the scale graduations extending through the interface at the inner surface of the vessel when the vessel is empty, so that the graduations are visible from above through the mouth of the vessel, light rays from the scale graduations being totally internally reflected at the interface between the inner surface of the vessel wall and a liquid in the vessel, with the liquid having greater refraction index than air, the scale graduation thus being no longer visible from above through the mouth of the vessel.

4,262,536

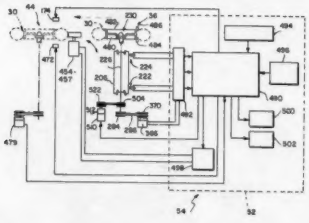
DYNAMIC IMBALANCE DETERMINING SYSTEM

Donald E. Orem, Indianapolis; Vernon P. Holmes, Danville, both of Ind.; Thomas J. Bacsanyi, Novi, and Edward J. Harmon, Detroit, both of Mich., assignors to Ransburg Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 927,760, Jul. 25, 1978, Pat. No. 4,191,055. This application Oct. 5, 1979, Ser. No. 82,317
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **14 Claims**

1. A drive mechanism for use in combination with an apparatus for determining the amount and location of imbalance of an article having two planes in which it is to be balanced and an axis about which it is to revolve., the apparatus including a base, means for supporting the article for substantially free revolution with respect to the base, a spindle extending along the axis of revolution of the article, means for mounting the spindle for movement with the article-supporting means, means for generating output signals in response to force ex-

erted between the spindle and the base as the article is revolved, wherein the drive mechanism comprises a first motor and drive wheel mounted for rotation by the first motor, means for movably mounting the drive wheel on the base for selective movement between a driving position in engagement with the article and a storage position out of engagement with the article, a second motor and means for rotatably coupling said spindle to said second motor, excitation of said first motor and engagement of the drive wheel with the article causing the article and the rotatable coupling means of the second motor to



accelerate to a predetermined rotation frequency, and movement of the drive wheel out of engagement with the article, and actuation of the second motor and coupling means of the second motor permitting the second motor to maintain the rotation rate of the article and spindle at substantially the predetermined rotation frequency while also permitting movement of the article relative to the base in response to dynamic imbalance in the article free of the effect of any dynamic imbalance in the drive mechanism, the movement generating said output signals which are used to determine the amount and location of imbalance of the article.

4,262,537

SPEEDOMETER AND/OR ODOMETER FOR SKIERS

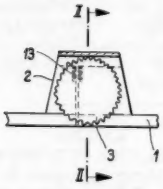
Dieter E. Jander, Bäkestrasse 2, 1000 Berlin 45, and Arne W. P. Franke, Buchsweilerstrasse 4, 1000 Berlin 33, both of Fed. Rep. of Germany

Filed Mar. 21, 1979, Ser. No. 22,439

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 2813704; Aug. 28, 1978, 2837834; Nov. 6, 1978, 2848520

Int. Cl.³ G01P *3/49, 1/04;* **G01C** *22/00*

U.S. Cl. 73—490 **4 Claims**



1. Device for skiers for measuring the speed and/or distance skied, comprising two toothed wheels on a common shaft positioned laterally to the ski, the teething of said wheels being resilient and in mechanical contact with the snow, means for indicating speed and/or distance, means for transmitting the rotation of said wheels to said indicating means, protective walls for protecting said wheels at the sides and leaving spaces in which said wheels are positioned open toward the rear thereof, said protective walls ending at the bottom slightly above the plane of the ski sole, the lower edges of said protective walls being lower at the front than at the back and the step between the front part and the back part of the edges lying before the wheel axis in the direction of motion in such a way that the resilient teeth of said wheels cannot be squeezed between said edges and the underground.

4,262,538

METHOD OF DETECTING RUBBING BETWEEN ROTATING BODY AND STATIONARY BODY

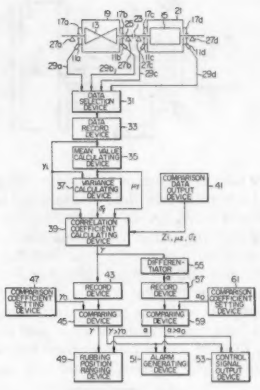
Yasuhiko Otawara, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,288

Claims priority, application Japan, May 16, 1978, 53-57140

Int. Cl.³ G01M *7/00*

U.S. Cl. 73—593 **6 Claims**



1. A method of detecting rubbing taking place between a rotating body rotatively driven by a working fluid and a stationary body in support of said rotating body, said method comprising the steps of: measuring the vibrations at a plurality of points on at least one of said rotating body and said stationary body during a predetermined sampling period; obtaining correlation coefficients from a group of measured data constituted by both measured data or measured data on one of said rotating and stationary bodies and from any one of the groups of vibration data which have been previously measured and accumulated under the same condition and in the state of rubbing; comparing thus obtained correlation coefficients with predetermined reference correlation coefficients; and detecting the occurrence of said rubbing from the result of the comparison.

4,262,539

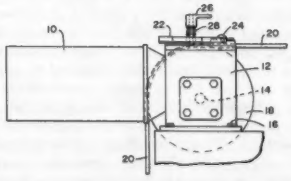
DRIVE ASSEMBLY FOR PROBE CARRIER

Thomas D. Jamison, Fort Oglethorpe, Ga., and Frank T. Radcliff, Chattanooga, Tenn., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jul. 16, 1979, Ser. No. 58,008

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—622 **12 Claims**



1. A drive assembly for a probe carrier such as used for

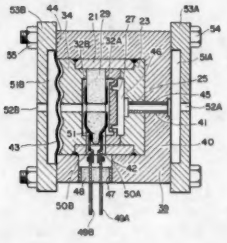
inspection and maintenance of tubular products comprising a motor, means for coupling said motor to a drive shaft, a drive wheel mounted on such shaft, said drive wheel having peripheral surface for engaging a probe carrier with said peripheral surface defined by a plurality of wires radially mounted on said wheel, and means for urging a probe carrier into engagement with said peripheral surface.

4,262,540

PRESSURE MEASURING DEVICE

Mitsuru Tamai, and Takeshi Yasuhara, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 25, 1979, Ser. No. 88,423
Claims priority, application Japan, Nov. 2, 1978, 53/135626
Int. Cl.[3] G01L *9/12*
U.S. Cl. 73—718 **6 Claims**



1. A pressure measuring device comprising:

a detecting section including an inner cylinder; a disc-shaped diaphragm base having a through-hole extending from one end face thereof to the other end face thereof, said diaphragm base being mounted on one end face of said inner cylinder; a pressure measuring diaphragm mounted on one end face of said diaphragm base in said inner cylinder; a disc-shaped insulator having a through-hole extending from one end face thereof to the other end face thereof and two metal foil electrodes provided respectively on said two end faces thereof, said insulator being positioned in said inner cylinder in such a manner that the distance between one of said electrodes and said pressure measuring diaphragm is maintained at a first predetermined value; and a disc-shaped reference electrode plate having a through-hole extending from one end face thereof to the other end face thereof, said reference electrode plate being mounted on the other end face of said inner cylinder in such a manner that the distance between the one end face thereof and the other electrode on the other end face of said insulator is maintained at a second predetermined value;

an outer cylinder having at a first end thereof a bottom portion with a through-hole, said detecting section being positioned in said outer cylinder with said diaphragm base directed towards said bottom portion;

a seal diaphragm closing a second end of said outer cylinder, a first measurement pressure being applied to said seal diaphragm;

a tubular member attached to said outer cylinder at said through-hole of said outer cylinder and said diaphragm base at said through-hole of said diaphragm base for introducing a second measurement pressure into a first space defned by said diaphragm base and said pressure measuring diaphragm;

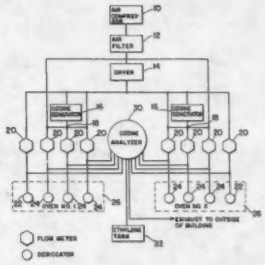
a sealed space being provided by said outer cylinder and said seal diaphragm with the exception of said first space filled with an insulating liquid.

4,262,541

METHOD OF AGE TESTING RUBBER BASED PROPELLANTS

Merrit Jacobs, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1979, Ser. No. 24,645
Int. Cl.[3] G01N *3/08*
U.S. Cl. 73—826 **2 Claims**



1. A method of testing the aging properties of a rubber-based propellant comprising the steps of:

(1) exposing a plurality of stressed samples of the rubber-based propellant to a controlled flow of air containing from 10 to 1,000 parts of ozone per billion parts of air and a carefully controlled concentration of moisture; and

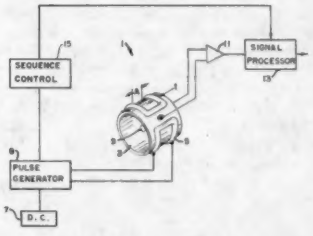
(2) periodically determining the maximum tensile, the tensile at rupture, the percent elongation at maximum tensile and at rupture of the rubber-based-propellant samples.

4,262,542

FAMILY OF MAGNETIC FLOWMETERS

William R. Freund, Jr., Hatfield, and John C. Grebe, Jr., Norristown, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,761
Int. Cl.[3] G01F *1/58*
U.S. Cl. 73—861.12 **6 Claims**



1. A family of magnetic flowmeters of different sizes, each of said flowmeters comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, coil means for generating a magnetic field in said fluid flowing through said body, a coil drive circuit for producing an excitation current in said coil means, a pair of electrodes in said meter body for producing a flow-dependent signal dependent on the electric field generated in said fluid flowing through said magnetic field, and signal processing means for amplifying said flow-dependent signal to produce an output signal dependent thereon, characterized in that each flowmeter in said family produces substantially the same output signla for a given average velocity of flow and consumes substantially the same excitation power, said coil means of each said flowmeter being

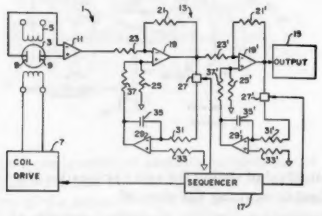
air core coils, said coil drive circuit of each said flowmeter producing an identical pulsed DC excitation current, and said coil means of each said flowmeter being sized such that the strength of said magnetic field is inversely proportional to the separation of said electrodes.

4,262,543

MAGNETIC FLOWMETER HAVING MULTIPLE STAGE AMPLIFIER WITH AUTOMATIC ZEROING

John C. Grebe, Jr., Norristown, and William R. Freund, Jr., Hatfield, both of Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 9, 1979, Ser. No. 82,762
Int. Cl.³ G01F *1/60*
U.S. Cl. 73—861.17 **5 Claims**



1. In a magnetic flowmeter comprising a body adapted to be connected in a flow system for measuring the flow of a fluid therethrough, means for generating a magnetic field in the fluid flowing through the body, a pair of electrodes for producing a voltage dependent on the electric field generated in the fluid flowing through the magnetic field, and signal processing means for converting the output voltage to an output signal,

the improvement wherein said signal processing means comprise a multiple stage amplifier system including first amplifier means and second amplifier means connected in cascade with said first amplifier means,

said first amplifier means comprising an amplifier, an automatic zeroing circuit connected in a feedback circuit around said amplifier, and switch means for turning said zeroing circuit on to provide active zeroing and off to hold a zeroed reference voltage for said amplifier,

said second amplifier means comprising an amplifier, an automatic zeroing circuit connected in a feedback circuit around said amplifier, and switch means for turning said zeroing circuit on to provide active zeroing and off to hold a zeroed reference voltage for said amplifier, and

timing means for sequentially turning off said zeroing circuit of said first amplifier means and then turning off said zeroing circuit of said second amplifier means, thereby zeroing in said second amplifier means any error produced by turning off said zeroing circuit of said first amplifier means.

4,262,544

TORQUE-TRANSDUCER FOR VORTEX-SHEDDING FLOWMETER HAVING TORSIONAL SENSOR

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

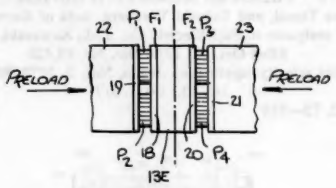
Continuation-in-part of Ser. No. 13,557, Feb. 21, 1979, which is a continuation-in-part of Ser. No. 944,624, Sep. 21, 1978, Pat. No. 4,181,020. This application May 10, 1979, Ser. No. 37,532
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.24 **11 Claims**

1. A vortex-shedding flowmeter for metering the flow rate of a fluid, said flowmeter comprising:

A. a flow tube having a shedder disposed therein;

B. a sensor torsionally supported in said flow tube at a downstream position behind the shedder on a pivot shaft which projects outside the tube to provide a shaft extension, said shaft extension having flattened sides to define opposing planar faces, an incoming fluid stream being divided by said shedder which causes vortices to appear on either side of said sensor to develop a torque about the pivot axis of said shaft, the torque bieng developed alternating in a clockwise and counterclockwise direction to cause said shaft extension to oscillate at a frequency proportinal to the flow rate of the fluid being metered; and

C. a torque transducer operatively coupled to said extension to convert said oscillations into an electrical signal having



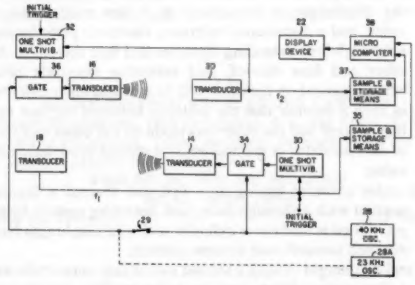
a corresponding frequency, said transducer being constituted by two pairs of piezoelectric elements, each pair of elements being in side-by-side relation and connected in parallel with their polarities opposed, and being interposed between a respective planar face of said extension and a stationary pre-loading block subjecting said pair of elements to pre-loading compression whereby as said extension oscillates, the elements are alternately compressed and decompressed to generate an alternating voltage providing the desired signal, the movement of said extension being restricted by said pre-loaded elements to a degree whereby said extension is virtually motionless.

4,262,545

ACOUSTIC FLUID VELOCITY MEASURING SYSTEM

Michel Lamarche, Laval; Dimitri Petrov, Montreal, and Arthur E. Maine, Kirkland, all of Canada, assignors to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 21, 1979, Ser. No. 22,555
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.27 **4 Claims**



1. A fluid velocity measuring system, comprising:

a first arrangement including two transmitting and two receiving electro-acoustic transducers disposed in a first direction;

a second arrangement including two transmitting and two receiving electro-acoustic transducers disposed in a second direction;

the first and second directions commensurate with rectangular components of the fluid velocity;

the transducers in each of the first and second arrangements

arranged in two separate electrical loops, each of the loops including a transmitting transducer and a receiving transducer, with the transmitting and receiving transducers heated during ice forming meteorological conditions;

the two electrical loops in each of the first and second arrangements being operated at different frequencies to provide acoustic isolation between the transmitting transducer in one loop and the receiving transducer in the other loop;

means for energizing the transmitting transducers in each of the loops to generate and transmit acoustic pulse bursts which are received by the receiving transducers in the respective loops;

the transducers in one loop arranged so that the acoustic pulse bursts are transmitted and received in the direction of a rectangular component of fluid velocity and the transducers in the other loop arranged so that the acoustic pulse bursts are transmitted and received in the opposite direction;

the receiving transducers responsive to the received acoustic pulse bursts for providing loop pulse outputs, with the outputs from each of the loops being at a different frequency; and

means responsive to the loop pulse outputs at different frequencies for determining fluid velocity.

4,262,546

STARTER MOTOR FOR AN INTERNAL COMBUSTION ENGINE

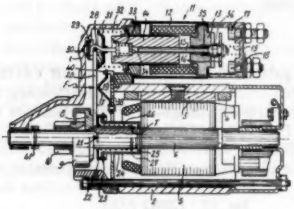
Alfred B. Mazzorana, Venissieux, France, assignor to Societe de Paris et de Rhone, Lyons, France

Filed Aug. 21, 1978, Ser. No. 935,139

Claims priority, application France, Sep. 15, 1977, 77 28531

Int. Cl.³ F02N *11/08*

U.S. Cl. 74—7 A **10 Claims**



1. A starter motor for an internal combustion engine, comprising an electromagnetic switch whose moving contact consists of a moving core having a bore therein and a contact-bearing rod having at least one contact at one end thereof, said switch being coupled to a yoke joined to the drive device of the starter pinion, said drive device having internal helical splines which engage with helical splines formed on the armature shaft of the motor, a contact spring housed in a recess in said moving core of said switch at one end of this core at which said yoke is coupled, said contact spring being positioned to act on said contact-bearing rod at its end remote from said one end, said contact-bearing rod being slidably mounted within said bore in said bore opening into said recess.

4,262,547

PUSHBUTTON TUNER

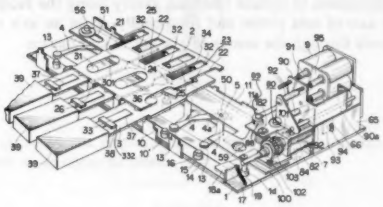
Takao Kanai, and Yasuhisa Nishikawa, both of Tokyo, Japan, assignors to Clarion Co. Ltd., Tokyo, Japan

Filed May 18, 1978, Ser. No. 907,403

Claims priority, application Japan, May 19, 1977, 52-57105; May 19, 1977, 52-63241[U]; May 19, 1977, 52-63242[U]; May 19, 1977, 52-63243[U]

Int. Cl.³ F16H *35/18;* H03J *1/08, 1/12*

U.S. Cl. 74—10.33 **6 Claims**



1. A pushbutton tuner which comprises: stationary support means; a plurality of button slides supported for movement in a given direction on said support means between extended and retracted positions; button slide movement responsive means supported for movement on said support means in a direction perpendicular to the direction of movement of the button slides by actuating any selected button slide; gear mechanism arranged on said support means to be rotated by said movement of said button slide movement responsive means; frequency determining means controlled by the degree of movement imparted to said gear mechanism; manually operable means; worm wheel mechanism carried on a movable support means, said worm wheel mechanism being coupled to said manually operable means for rotation thereby; and clutch means coupled between said worm wheel mechanism and said gear mechanism, which clutch means is responsive to said bodily movement of said worm wheel and its support means by decoupling the worm wheel mechanism from said gear mechaniam.

4,262,548

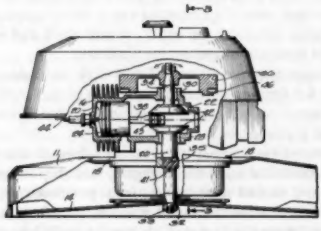
FLYWHEEL OVERBALANCE

Gerald Haft, and Otto H. Scharpf, both of Brookfield, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 7, 1979, Ser. No. 36,761

Int. Cl.³ F16H *21/22;* F02B *75/06*

U.S. Cl. 74—44 **5 Claims**



1. A powered device having a center of gravity and including an engine comprising a block member defining a single cylinder, a crankshaft having opposite first and second end portions, generally spaced support means on said block member for supporting said crankshaft for rotation with said first end portion extending toward the center of gravity and said second end portion extending beyond said support means, a piston located in said block member for reciprocative move-

ment, a connecting rod having a first end portion pivotally connected with said piston and a second end portion rotationally connected with said crankshaft intermediate said support means for converting reciprocative movement of said piston into rotation of said crankshaft about its axis, first counterweight means on said crankshaft adjacent to said second end portion of said connecting rod for rotationally balancing said second end portion of said connecting rod, and second counterweight means on said crankshaft adjacent to said second end of said crankshaft for generating a force in response to piston reciprocation to reduce vibration axially along the reciprocative axis of said piston and rotationally about an axis which extends through the center of gravity of said device.

4,262,549

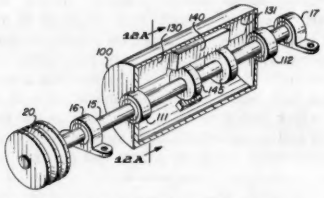
VARIABLE MECHANICAL VIBRATOR

Donald D. Schwellenbach, 4520 W. Bryce Lane, 4520 W. Bryce La., Ariz. 85301

Filed May 10, 1978, Ser. No. 904,313

Int. Cl.³ B06B *1/16*; B65G *27/20*

U.S. Cl. 74—87 **11 Claims**



3. A rotating vibrator including in combination:

a rotatably mounted shaft;

first eccentric weight means on said shaft for rotation therewith;

a rotational mass including a second eccentric weight means disposed about the axis of said shaft and mounted for free concentric rotation about said shaft;

driving means coupled with at least one of said shaft and said rotational mass for changing the rotational speed of said vibrator, whereby the other of said shaft and said rotational mass comprises an inertia mass;

stop means attached to one of said shaft and said rotational mass for limiting the relative rotation of said shaft and said rotational mass between first and second relative rotational positions; and

engagement means coupled with the other of said shaft and said rotational mass for engaging said stop means in said first and second relative rotational positions; such that in said first relative rotational position, said first and second weight means are located on diametrically opposite sides of said shaft to balance the vibrator when said driving means is decelerating, and in said second relative rotational position said first and second weight means are located on the same side of said shaft to unbalance the vibrator, with said stop means located so that said first and second weight means are locked into said second position solely by means of forces caused by rotation when said driving means is increasing or maintaining constant the rotational speed of said vibrator.

4,262,550

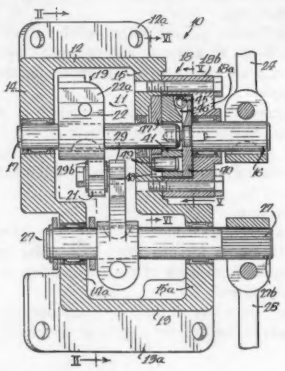
GOVERNOR AND DECELERATOR CONTROL LINKAGE

Alvin L. Kuhfuss, Jr., Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 30,245, Feb. 12, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,501

Int. Cl.³ G05G *11/00, 5/04*

U.S. Cl. 74—482 **16 Claims**



1. In an engine control linkage which comprises a housing (10), a first shaft (16) journalled in the housing, a second shaft (17) journalled in the housing, and one-way coupling means (18) for selectively rotating the second shaft (17) either independently of and without affecting the first shaft (16), or as a result of rotating the first shaft (16), the improvement comprising:

a first lever (19) mounted on the second shaft (17);

means (24) operatively connected to the first shaft (16) for rotating said first shaft to move the second shaft (17) and said first lever (19) between first and second limit positions of said first lever (19);

a third shaft (27) journalled in the housing (10);

and means (28–29) operatively associated with said third shaft (27) to rotate the second shaft (17) and the first lever (19) independently of the first shaft (16), and without disturbing the latter, between said first limit position and a third position which is intermediate said first and second limit positions.

4,262,551

SAFETY STEERING WHEEL FOR MOTOR VEHICLES

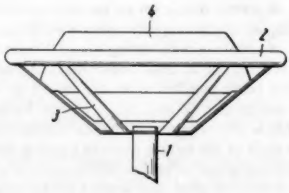
Hans Korn, Hanau, and Klaus Grothe, Aschaffenburg, both of Fed. Rep. of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,412

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730672

Int. Cl.³ G05G *1/10*

U.S. Cl. 74—552 **6 Claims**



1. In a bowl-shaped steering wheel for a motor vehicle

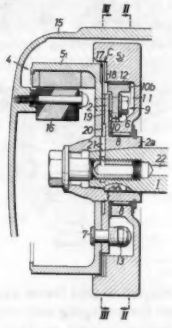
comprising a steering wheel hub and a steering wheel rim, said steering wheel hub being recessed from said steering wheel rim, said steering wheel having a deformable body disposed between said steering wheel hub and said steering wheel rim the improvement wherein said deformable body comprises a knitted metal wire which is imbedded in a homogeneous plastically deformable foamed plastic material.

4,262,552

FLYWHEEL ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE

Shoichi Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 839,123, Oct. 3, 1977, abandoned. This application Nov. 8, 1979, Ser. No. 92,500
Claims priority, application Japan, Oct. 8, 1976, 51-136216
Int. Cl.³ G05G *1/00*
U.S. Cl. 74—572 **4 Claims**



1. A flywheel assembly for an internal combustion engine having a crankshaft, comprising: a first flywheel having a boss portion fixedly mounted on said crankshaft, a second flywheel rotatably mounted on said boss portion of said first flywheel through a bearing, said second flywheel having an annular recess formed therein at a location adjacent said first flywheel, a centrifugal type clutch housed in said recess of said second flywheel and being operable to interconnect said crankshaft and second flywheel when rotation speed of said engine is less than a predetermined level and adapted to disengage when engine rotation speed exceeds said predetermined level, said centrifugal type clutch including clutch shoes disposed in said recess, each being pivotally supported on said first flywheel, said clutch shoes each having a weighted portion and a friction engaging portion formed at the opposite ends thereof, being normally urged by spring means in a direction to hold said friction engaging portion in engagement with an inner peripheral wall surface of said recess.

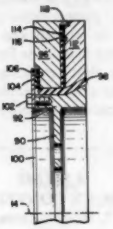
4,262,553

TORSIONAL VIBRATION DAMPER

Robert C. Bremer, Jr., Brownsburg, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Division of Ser. No. 664,381, Mar. 5, 1976, Pat. No. 4,083,265. This application Jan. 27, 1978, Ser. No. 872,754
Int. Cl.³ F16F *15/10*
U.S. Cl. 74—574 **11 Claims**

1. A torsional vibration damper of the type having an annular hub adapted to be coupled to the crankshaft of an internal combustion engine to damp torsional vibrations thereof, the improvement comprising, a single elastomer annulus surrounding the outer radial periphery of the hub, a plurality of annular inertia rings each of whose inner peripheries engage the elastomer annulus and are carried by the elastomer annulus on the hub, the inertia rings being frictionally coupled to each other,



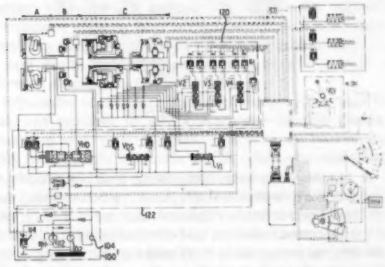
each of the inertia rings capable of executing angular motion relative to an adjacent inertia ring.

4,262,554

HYDRAULIC VALVE SYSTEM FOR CONTROLLING PARTICULARLY A VEHICLE GEARBOX

Karl G. Ahlen, Bromma, and Rainer B. Ketola, Stockholm, both of Sweden, assignors to S.R.M. Hydromekanik Aktiebolag, Stockholm-Vallingby, Sweden

Filed Aug. 15, 1979, Ser. No. 66,859
Claims priority, application United Kingdom, Aug. 24, 1978, 34391/78; Nov. 21, 1978, 45431/78
Int. Cl.³ F16H *47/00*
U.S. Cl. 74—677 **23 Claims**



1. A hydraulic valve system comprising a plurality of multi-way valves of the disc type having an elongated axially movable member with discs mounted thereon such that axial movement of the elongated member causes at least one disc to move axially off of its seat to permit the flow of fluid therepast,

a first said multi-way valve of the disc type having a pressure connection connected to a source of pressurized fluid and two consumer connections, each alternately connectable to the pressurized fluid connection, and a pair of drain connections, each alternately connectable to a consumer connection not then connected to the pressure connection,

one of said consumer connections being further connected to the pressure connection of an interlocked valve system which comprises at least a second and a third multi-way valve of the said disc type, each of the second and third multi-way valves having means for connecting their respective pressure connections to at least one other consumer connection thereof,

and including interlocking means for interlocking said second and third multi-way valves so that only one of those valves can have a consumer connection connected to a pressure connection at any one time.

2. A hydraulic system for controlling the gears in a vehicle gear box having at least three forward gears and one reverse gear, and including a servomotor for effecting engagement of

said gears, and including the valve system according to claim 1 for controlling said servomotors, wherein the consumer connections of said first multi-way valve are connected one to the reverse gear and one to the interlocked valve system, and wherein the consumer connections of the second and third multi-way valves of the interlocked valve system are connected each to a different one of the forward gear servomotors, whereby the pressure fluid entering the interlocked valve system is connected to one consumer connection while the other consumer connections thereof are connected to the drain connection.

4,262,555

TORQUE CONVERTER

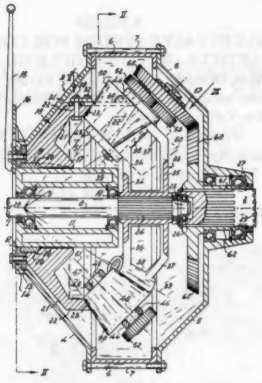
Cornelis van der Lely, 7, Brüschennain, Zug, Switzerland

Filed Oct. 11, 1978, Ser. No. 950,459

Claims priority, application Netherlands, Oct. 14, 1977, 7711277

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—690 **19 Claims**



6. A torque converter comprising a driving shaft and a frictional drive to a driven shaft, the drive connection comprising at least one rotatable frictional element in rotary engagement with a contact surface, said element being freely rotatable and in driving engagement with said surface during operation in a plurality of working positions, the prolongation of a line of contact between said element and said contact surface being angled to the prolongation line of the rotary axis of said element, the prolongation lines intersecting one another approximately at the center line of said driving shaft in said working positions, gear means drivingly interconnecting said element with said driven shaft.

7. A torque converter as claimed in claim 6, wherein each element is a conical roller having a surface the imaginary summit of which intersects the center line of said driving shaft approximately at the same location as the prolongation line of said contact surface, said contact surface being formed by a ring that is displaceable along the length of said driving shaft.

4,262,556

DRIVE MECHANISM

Cullen P. Hart, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 24, 1978, Ser. No. 965,555

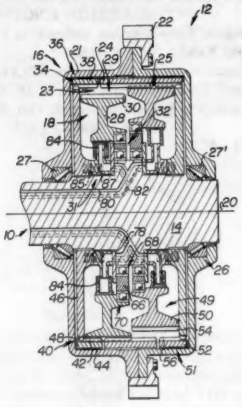
Int. Cl.³ F16H *1/28*

U.S. Cl. 74—805 **19 Claims**

1. In a drive mechanism (10) having a frame (14) having an axis (20), a first member (16) positioned about said frame (14), a first bearing element (26) positioned between said frame (14) and first member (16) and supporting said first member (16) in rotatable relationship relative to said frame (14), a second member (18) positioned generally between said frame (14) and said first member (16) and being movable in an orbital pathway relative to said frame axis (20) and of a construction sufficient for engaging and rotating said first member (16) in response to said second member (18) moving in said orbital pathway, and first means (31) for rotating said second member (18), the improvement comprising:

second means (32) for supporting said second member (18) in said orbital pathway;

another member (72) positioned generally between the frame (14) and the first member (16) and being movable in



an orbital pathway relative to said frame axis (20) and of a construction sufficient for engaging and rotating said first member (16) in response to said another member (72) moving in said orbital pathway; and

only a single element (34) of a construction sufficient for establishing the drive ratio of the first member (16) relative to the second member (18) and to said another member (72) and receiving and transmitting reaction torquing force on said second member (18) in response to said second member (18) engaging said first member (16) and on said another member (72) in response to said another member (72) engaging said first member (16).

4,262,557

METHOD AND SYSTEM FOR LIMITING THE JOLT DURING GEAR SHIFTS IN A MOTOR VEHICLE

Ferdinand Grob, Besigheim, and Friedrich Rabus, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,742

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755202

Int. Cl.³ B60K *41/04*

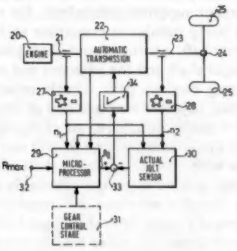
U.S. Cl. 74—861 **5 Claims**

1. In a motor vehicle having an engine (20), wheels (25), regulator means (34) for furnishing regulator output signals, transmission means (22) operative in a plurality of gear ratios for transmitting torque from said engine to said wheels, said transmission means having a plurality of friction elements operative under control of said regulator output signals in a slippage phase and a fully engaged phase, shift start signal furnishing means for furnishing a shift start signal at the start of each gear shift operation, first and second speed sensor means (27, 28) for furnishing a first and second speed signal respectively signifying the then-present input speed and then-present output speed of said transmission means, actual jolt signal furnishing means (30) for furnishing an actual jolt signal corresponding to the actual jolt of said vehicle, and maximum jolt signal furnishing means for furnishing a maximum permissible

jolt signal indicative of the maximum permissible jolt of said vehicle:

a method for regulating the jolt of said vehicle to less than said maximum permissible jolt both during said slippage phase and said fully engaged phase, comprising the steps of creating a first and second initial speed signal corresponding, respectively, to said input speed of said transmission and said output speed of said transmission at the start of said gear shift operation; computing a maximum permissible slippage jolt from said first and said second initial speed signal and said maximum permissible jolt signal and furnishing a maximum permissible slippage jolt signal corresponding thereto; creating regulator input signals corresponding to the difference between said maximum permissible slippage jolt signal and said actual jolt signal; and applying said regulator input signals to said regulator means for controlling the operation thereof.

3. In a motor vehicle having an engine (**20**), wheels (**25**), regulator means (**34**) for furnishing regulator output signals, transmission means (**22**) operative in a plurality of gear ratios for transmitting torque from said engine to said wheels, said transmission means having a plurality of friction elements operative under control of said regulator output signals in a slippage phase and a fully engaged phase, shift start signal furnishing means for furnishing a shift start signal at the start of each gear shift operation, first and second speed sensor means



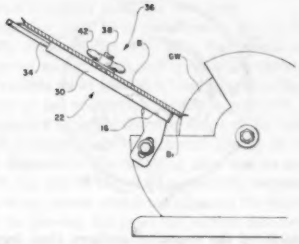
(**27, 28**) for furnishing a first and second speed signal respectively signifying the then-present input speed and then-present output speed of said transmission means, actual jolt signal furnishing means (**30**) for furnishing an actual jolt signal corresponding to the actual jolt of said vehicle, and maximum jolt signal furnishing means for furnishing a maximum permissible jolt signal indicative of the maximum permissible jolt of said vehicle:

apparatus for regulating the jolt of said vehicle to less than said maximum permissible jolt both during said slippage phase and said fully engaged phase, comprising computer means (**29**) connected to said first and second speed sensor means, said shift start signal furnishing means, and said maximum permissible jolt signal furnishing means, for furnishing a first and second initial speed signal corresponding, respectively, to said first and second speed signal upon receipt of said shift start signal, computing a maximum permissible slippage jolt as a function of said first and second initial speed signal and said maximum permissible jolt signal, and furnishing a maximum permissible slippage jolt signal corresponding to the so computed maximum permissible slippage jolt; and comparator means (**33**) connected to said computer means, said actual jolt signal furnishing means and said regulator means for furnishing regulator input signals controlling the operation of said regulator means in response to said maximum permissible slippage jolt signal and said actual jolt signal.

4,262,558
APPARATUS FOR SHARPENING CIRCULAR SAW BLADES

Donald S. Long, 207 Kelso Ct., Cary, N.C. 27511

Filed Sep. 19, 1979, Ser. No. 76,855
Int. Cl.[3] **B63D** *63/14*
U.S. Cl. 76—37 **14 Claims**



1. A circular saw blade sharpening attachment adapted to be mounted adjacent a grinding machine having a rotary driven sharpening stone wherein the sharpening attachment acts to support a circular saw blade being sharpened and to guide the blade back and forth into and out of engagement with the sharpening stone, said sharpening attachment comprising:

(a) connecting bracket means for mounting said sharpening attachment adjacent said sharpening stone of said grinding machine and including means for adjusting said connecting bracket means relative to said sharpening stone;

(b) a blade support member connected to said connecting bracket means and extending therefrom and including an upper blade resting and sliding surface for supporting respective circular saw blades being sharpened and for enabling the circular saw blades to be moved thereover;

(c) said blade support member including a voided area formed therein;

(d) adjustable connecting means interconnecting said blade support member to said connecting bracket means for enabling said blade support member to be moved generally horizontally from side to side relative to said sharpening stone and said connecting bracket means;

(e) a blade carriage assembly associated with said blade support member and movably mounted thereon for back and forth movement relative to said sharpening stone;

(f) said blade carriage assembly including an elongated member extending through said blade support member and the voided area therein and movable back and forth therein; and

(g) a blade carrier device secured to said elongated member and provided with means for securing a circular saw blade thereto such that the circular saw blade is supported about the upper surface of said blade support member and may be moved back and forth therealong by actuating said elongated member, whereby selected teeth on said circular saw blade can be pushed into engagement with said sharpening stone and pulled from engagement therewith by pushing and pulling said elongated member.

4,262,559
METHOD FOR FABRICATING IMPROVED CUTTER CONES FOR A FOOD PROCESSING MACHINE

Norman A. Bergan, Dallas, Tex., assignor to Dimark, Inc., Dallas, Tex.

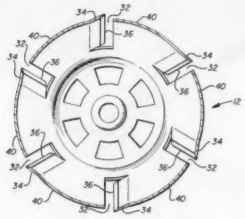
Filed Dec. 7, 1978, Ser. No. 967,419
Int. Cl.[3] **B21K** *21/00*; **B24B** *1/00*
U.S. Cl. 76—101 A **2 Claims**

1. A method for constructing an improved cutter cone for a food processing machine comprising the steps of:

cutting a plurality of axially oriented elongated slits in the surface of a frustoconical surface;

bending one edge of each of the slits internally of the conical surface at a predetermined angle to the surface to form a louvered surface;

grinding the inside of each of the louvered surfaces to form an inwardly directed working surface and a cutting edge on the interior side thereof;



bending each of the working surfaces thus formed outwardly of the conical surface at a predetermined angle to the cone; and

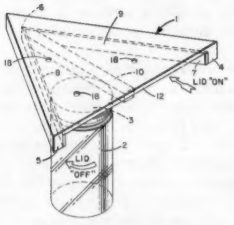
polishing the exterior of each working surface to remove any burrs formed thereon during the grinding step.

4,262,560

SECURING AND LOOSENING DEVICE FOR BOTTLES, JARS AND THE LIKE

Charles C. Hoffberger, 608 S. Pineapple Ave., Sarasota, Fla. 33577

Filed Aug. 27, 1979, Ser. No. 69,840
Int. Cl.[3] B67B 7/18
U.S. Cl. 81—3.3 R **7 Claims**



1. A device for tightening or loosening a screw top of a threaded vessel comprising a unitary triangular wedge shape having a planar substrate wherein all perimeter sides of said substrate of said triangle intersect to form an isosceles or equilateral triangle having a base line, said triangular wedge shape having a first and second side raised above said substrate and having a relatively smooth interior edge, both said first and second side at one terminus each interconnecting to form an apex of said triangular shape and the other terminus of each intersecting the base line of said triangular perimeter, said triangular wedge shape possessing a raised, relatively smooth sided rubberish flexible gripping means disposed in a plane parallel to the plane in which said apex is situated to form two right triangles within said isosceles or equilateral triangle wherein;

(a) a first right triangle is formed by one-half of the planar substrate base line, the relatively smooth sided rubberish flexible gripping means and said first smooth side; said first right triangle being receptive to said screw top of said threaded vessel wherein said screw top is loosened by rotating said vessel in an opening direction of rotation; and

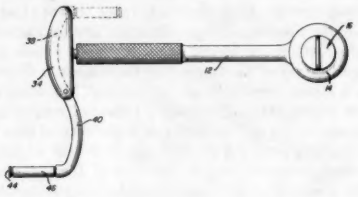
(b) a second right triangle is formed by one-half of the planar base line, which is distinct from the one-half of planar base line of said first right triangle, the relatively smooth sided rubberish flexible gripping means and said second smooth side; said second right triangle being respective to said screw top which is tightened by rotating said vessel in a closing direction of rotation.

4,262,561

RATCHET AND GEAR DRIVE SOCKET WRENCH HANDLE

Lee S. Mize, 1652 16th Rd., Fruita, Colo. 81521

Filed Dec. 27, 1979, Ser. No. 107,669
Int. Cl.[3] B25B 17/00
U.S. Cl. 81—57.29 **7 Claims**



1. In combination with an elongated handle defining a hand grip at one end and an enlarged head at the other end, said enlarged head having a reversible ratchet-type drive assembly supported therefrom including a rotary output shaft disposed transverse to said handle and adapted to have a rotary port transfer member supported therefrom for rotation therewith, said handle being tubular intermediate said one end and said rotary output shaft, a torque input shaft journaled in said handle, said output shaft and the adjacent end of said torque input shaft including meshed gear wheels mounted thereon, said input shaft end adjacent said one end of said handle including first torque transfer structure, an elongated grip positioned adjacent and disposed transverse to said one end of said handle in alignment with said torque input shaft and including lateral second torque transfer structure releasably engaged with said first torque transfer structure for removably coupling said hand grip to said torque input shaft, said hand grip, on the side thereof remote from said other handle end including an elongated laterally outwardly opening groove formed therein and extending longitudinally thereof, an elongated crank arm having one end pivotably mounted in one end of said groove for angular displacement about an axis transverse to said clamp arm and said groove between generally 180° relatively angularly displaced retracted and extended positions with said hand grip disposed in and extending longitudinally of said groove and projecting endwise outwardly of said one end of said groove, respectively, the other end of said crank arm including a terminal end portion disposed generally normal to said hand grip, generally paralleling said handle when said crank arm is in said retracted and extended positions and projecting away from said other end of said handle when said crank arm is in said extended position.

4,262,562

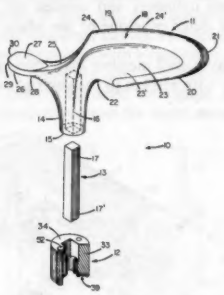
GOLF SPIKE WRENCH AND HANDLE

Arden B. MacNeill, Sudbury, Mass.

Filed Apr. 2, 1979, Ser. No. 26,290
Int. Cl.[3] B25B 13/02
U.S. Cl. 81—90 C **16 Claims**

1. Handle suitable for a variety of means comprising a shaft and requiring a handle comprising a vertically disposed shaft portion, a face defining the bottom of the shaft portion, a dead bore in said face extending inwardly therefrom for a pre-determined distance into said shaft portion for insertion of said shaft, an imaginary center line extending along said dead bore and shaft portion, a universal gripping portion for gripping with the palm of one's right or left hand extending from said shaft portion and disposed upwardly at an acute angle to said imagi-

nary center line, a thumb rest extending from said shaft portion at a point below said gripping portion and in a direction directly opposite from said gripping portion, whereby one's thumb can be used in the application of pressure while gripping the handle.



4,262,563

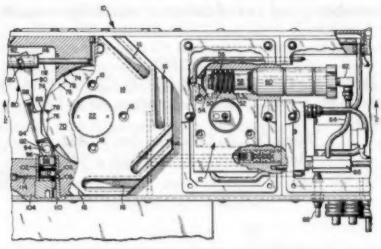
TURRET INDEXING ASSEMBLY FOR MACHINE TOOLS

Ivan R. Brown, Horseheads, and Garnet R. Lyon, Elmira, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Jun. 5, 1978, Ser. No. 912,448

Int. Cl.³ B23B *29/32*

U.S. Cl. 82—36 A **8 Claims**



1. A turret assembly for a machine tool, comprising:

(a) a turret rotatably mounted on a base and which has multiple work stations,

(b) turret rotating means mounted on the base and connected to the turret for rotating the turret so as to move the work stations from one operating position to another,

(c) cushioned turret stopping means mounted on the base and movable into engagement with the turret for gently stopping rotation of the turret after it has been rotated so as to bring a given work station to an operating position,

(d) alignment means having elements on both the turret and the base for very accurately positioning the turret work station after it has been brought into operating position by the turret stopping means,

(e) the turret stopping means including a plurality of angularly spaced large radially extending stop faces one for each work station and which are integrally connected to the turret,

(f) the turret stopping means also including a fluid cylinder and pawl assembly mounted on the base in which a pawl has one end directly and pivotally connected to an element of the fluid cushioning cylinder for movement therewith.

(g) the axis of the fluid cylinder being generally disposed in a direction tangential to the rotative path of the radially disposed stop surfaces,

(h) the pawl having a large central flat stop face engaging surface which is moved into and out of the path of rotation of the plural stop faces as they rotate with the turret to engage one of the stop faces, and

(i) activating means connected to the pawl adjacent the free end for moving its flat face into and out of engagement with a given one of the stop faces and generally in line with the axis of the fluid cylinder axis.

6. A turret assembly for machine tool, comprising:

(a) a turret rotatably mounted on a base,

(b) an indexing plate having a plurality of angularly spaced radially disposed flat stop faces and which is integrally connected to the turret and is rotatable therewith,

(c) a pivotable pawl having a large flat stop face engaging surface at its midsection which is movable into direct engagement with the flat stop faces of the index plate,

(d) fluid cylinder cushioning means having its axis tengentially disposed to the indexing plate and to an element of which one end of the pawl is pivotally supported, and

(e) activating means connected adjacent the other end of the pawl for moving the pawl flat surface into and out of the rotative path of the stop faces of the index plate.

4,262,564

METHOD OF AND A DEVICE FOR THE ELIMINATION OF PLAY IN FEEDING MEANS OF A COLD-ACTION CIRCULAR SAW

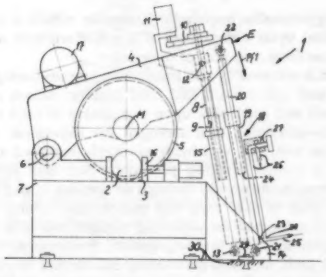
Dieter Kaltenbach, Rebweg 33, 7850 Lörrach, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 55,006

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829856

Int. Cl.³ B23D *47/08*

U.S. Cl. 83—56 **19 Claims**



2. A method of eliminating play in a cold action circular saw of the type having a machine base adapted for supporting a workpiece, and a swingable saw arm hinged to said base and being adapted for supporting a power driven saw blade and feeding means operable to move said arm at a feeding pressure against said base, comprising the step of exerting a correcting continuous pressure against said arm in a direction opposite to that of said feeding pressure, said correcting pressure being larger than the combined force formed of the weight of said arm and of the maximum variable components of the cutting force acting in the feeding direction.

4,262,565

SLICING APPARATUS HAVING VARIABLE THICKNESS CONTROL

Mario J. Pedi, 16 Wickham Rd., Winchester, Mass. 01890

Filed Nov. 13, 1979, Ser. No. 93,239

Int. Cl.³ B26D *4/42*

U.S. Cl. 83—71 **6 Claims**

6. In apparatus for repeatedly cutting slices from a unit of comestible material, said apparatus having a saw, a lineal fence

adjacent said saw along which said unit is guided past said saw, the distance between said fence and said saw defining the thickness of a slice, clamping means for holding said unit firmly against said fence, transporting means for cyclically advancing said unit with said clamping means from a starting position where the unit is disengaged from said saw, along said fence into engagement with said saw to a final position beyond said saw to effect a completed slice, and returning the unsliced remainder of said unit to said starting position, and automatic unit infeed means, the improvement comprising

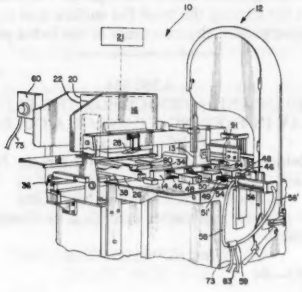
guide members fastened to said fence along which said fence can be translated transversely to its lineal axis,

bearing blocks for supporting said guide members,

a drive member fastened to said fence,

a pneumatically operated piston coupled to said drive member to translate said fence along said guide members,

a pair of adjustable stops to define the limits of motion of said drive member,



a programmable pneumatic controller which actuates said piston upon completion of a predetermined number of slices from said unit of material,

a switch actuated by said transporting means during advance of said unit toward said final position, which switch indexes said controller upon completion of each slice,

a slice-restraining arm arranged for movement with said fence unit, said arm being pivotably mounted and biased to a normal pivoting position where said end portion protrudes outwardly through an opening in said fence into the path of said unit, said end-portion having a tapered surface located for camming engagement with a leading edge of said unit, said engagement pivoting said arm out of said path, and said protruding end further having an obstructing surface opposite said tapered surface which blocks a slice moving from said final position toward said starting position, and

means for resetting said programmable pneumatic controller in response to each feeding of a new unit.

4,262,566

DEVICE FOR CONTINUOUSLY AND ROTATABLY CUTTING A SHEET TRANSVERSELY WITH RESPECT TO ITS DIRECTION OF ADVANCE

Jacques Fondronnier, Creteil Mont Mesly, and Jean Guillerm, Saint Maur, both of France, assignors to Centre Technique du Bois, Paris, France

Filed Jan. 23, 1979, Ser. No. 5,805

Claims priority, application France, Jan. 23, 1978, 78 01810

Int. Cl.[3] B27M *3/08;* B27L *5/08*

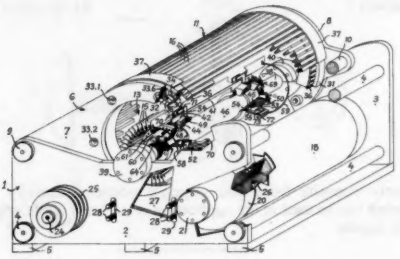
U.S. Cl. 83—116 **16 Claims**

1. Rotary cutting device comprising a rotor provided with longitudinal cutters adapted to penetrate by pressure in the sheet to be cut transversely, said device further comprising:

a squirrel cage surrounding the cutting rotor and presenting longitudinal bars which defines, in two's, slots for the passage of the cutters of this rotor, the axes of rotation of said rotor and of said cage being eccentric with respect to each other in order to effect a meshing of said cutters with said bars, by the interior,

an endless belt constituted by a cutting elastomer wound around two cylinders and applied by one of its sides against the outer envelope of the edges of the cutters of the rotor,

a rigid concave anvil member extending substantially concentrically with respect to the squirrel cage and disposed



thereopposite with respect to the endless belt which it is intended to support during its advance, a drive device adapted to drive in rotation, indifferently, one of the belt-carrier cylinders, the cutter-carrying rotor or the squirrel cage, and

a presser device tending to bring one of the squirrel cage and the anvil member closer to the other, indifferently, to grip therebetween the sheet to be cut, the distance of this anvil member to the axis of the rotor remaining constant.

4,262,567

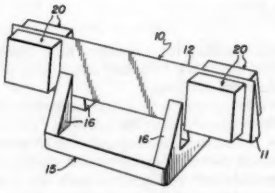
DEVICE FOR COOLING MICROTOME BLADE

Elizabeth M. Bettin, 228 S. Kensington Ave., LaGrange, Ill. 60525

Filed Oct. 1, 1979, Ser. No. 80,461

Int. Cl.[3] B26D *7/08;* G01N *1/06*

U.S. Cl. 83—171 **10 Claims**



1. In a microtome including a cutting blade and a support therefor, self-contained blade cooling apparatus comprising a closed container, a coolant confined within said container, and mounting means for removably attaching said container to the cutting blade in thermal contact therewith independently of the blade support.

4,262,568

CUT-OFF MECHANISM FOR CORRUGATED STRIP

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

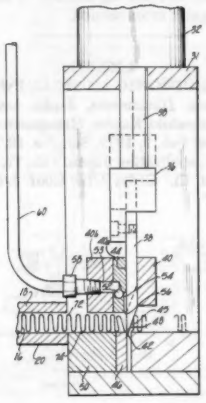
Filed Nov. 8, 1979, Ser. No. 92,478

Int. Cl.[3] B26D *5/42*

U.S. Cl. 83—176 **12 Claims**

1. In combination, means for advancing a corrugated metal strip in a predetermined path, said strip having a series of

longitudinally successive convolutions therein which extend transversely of the strip, the successive convolutions being connected at their upper and lower ends by return bends which form successive crests and roots between the successive convolutions, a shear in said path for cutting the strip transversely of its length, said shear having a stationary blade and a movable blade, each provided with a cutting edge and located one above the other below the path of travel of the strip, said stationary blade being positioned to engage the successive crests as the strip is advanced past the shear, means for reciprocating the movable blade toward and away from the stationary blade to shear the strip therebetween in a direction transversely thereof, and means for intermittently directing a stream of air generally perpendicular to the plane of said strip at the location of said stationary blade to urge the strip against the stationary blade, to displace the root between a pair of adjacent convolutions into alignment with the cutting edge of the stationary blade and momentarily arrest the advancing movement of the strip so that, when the movable blade is reciprocated, the strip will be severed transversely along said root.

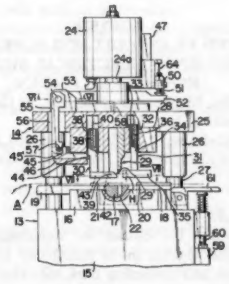


4,262,569

APPARATUS FOR THE FABRICATION OF A SLIDE FASTENER CHAIN WITH REINFORCEMENT TAPES

Keiichi Yoshieda, Kurobe, and Kazuki Kuse, Toyama, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 26, 1978, Ser. No. 973,434
Claims priority, application Japan, Dec. 30, 1977, 52-160360
Int. Cl.³ B26D *7/02*
U.S. Cl. 83—386 **3 Claims**



1. An apparatus for the fabrication of a fastener chain with reinforcement tapes comprising:

(1) a die,

(2) two chain guide plates positioned at the front and at the rear of the die, respectively, and each having a line protrusion on the upper surface thereof,

(3) a cutter positioned above the die with movability in the vertical direction,

(4) a pair of rear pressers positioned at the rear of the cutter and urged downwardly by a spring while suspendedly held by an engagement means comprised of a stopper movable to become engaged with and disengaged from the rear pressers for permitting sudden downward movement of the rear pressers and a means to drive the stopper, and

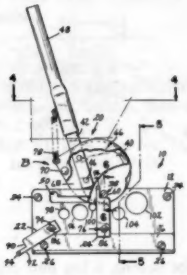
(5) a pair of front pressers positioned at the front of the cutter with movability in the vertical direction and urged downwardly by a spring.

4,262,570

HOSE CUTTER

Melvin J. Doyle, Plymouth, Minn., assignor to Marvel Rack Manufacturing Co., Minneapolis, Minn.

Filed Jan. 10, 1980, Ser. No. 111,106
Int. Cl.³ B26D *3/16*
U.S. Cl. 83—397 **9 Claims**



1. Apparatus for cutting a hose, comprising:

(a) a blade;

(b) means for supporting said hose while said blade is cuttingly moved through said hose;

(c) means attached to said blade for moving said blade with respect to said hose support means; and

(d) means for anchoring said blade moving means to said hose support means at a plurality of anchoring stations, said anchoring means allowing translation of said blade moving means from one station to another.

4,262,571

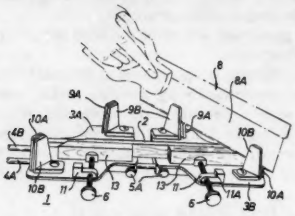
GUIDE ASSEMBLY FOR USE IN SAWING AN ELONGATE MEMBER

Stanley King; Giles Henschel, and Andrew Lawson, all of Henley on Thames, England, assignors to Stanley Tools Limited, Sheffield, England

Filed Mar. 28, 1979, Ser. No. 24,548
Claims priority, application United Kingdom, Mar. 28, 1978, 11881/78
Int. Cl.³ B27G *5/02*
U.S. Cl. 83—454 **6 Claims**

1. A guide assembly for use in sawing an elongate member having a longitudinal axis, comprising two saw-guide units, a support for rigidly interconnecting the two saw-guides units at a selectively variable distance apart, each saw-guide unit including means for guiding the blade of a saw in a predetermined sawing plane relative to the longitudinal axis of the elongate member, means for clamping the elongate member,

and abutment means presenting a reference surface perpendicular to said longitudinal axis, said abutment means being positioned so that if extended, if would intersect said sawing plane on said longitudinal axis.



4,262,572

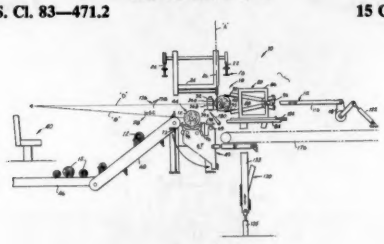
LOG SAWING APPARATUS

Larry M. Flodin, Box 80-528, Fairbanks, Ak. 99709

Filed Dec. 6, 1979, Ser. No. 100,939

Int. Cl.³ B27B *7/02*

U.S. Cl. 83—471.2 **15 Claims**



1. Apparatus for sawing a log into one or more timbers having rectangular cross sections, comprising:

a sawing station;

a frame at the sawing station;

a saw carriage mounted on the frame for reciprocating movement along a longitudinal path past the sawing station;

a saw mounted on the carriage for movement therewith with the saw being aligned to saw a log lengthwise in a prescribed sawing plane;

a first log aligning means at an orientation station for receiving a log and adjusting the orientation of the log to align the log with respect to a first alignment plane with the first alignment plane extending through the log ends defining a first log reference plane;

a log loading means for transferring the aligned log from the orientation station to the sawing station and positioning the log at the sawing station with the first log reference plane parallel with the prescribed sawing plane to enable the saw to initially cut the log parallel with the first log reference plane;

a log holding means at the sawing station for releasably gripping and holding the aligned log stationary while the log is being cut;

a second log aligning means at the sawing station for subsequently adjusting the orientation of the log to further align the log with respect to a second alignment plane that is normal to the prescribed sawing plane with the second alignment plane extending through the log ends defining a second log reference plane that is normal to the first log reference plane;

log rotating means at the sawing station for rotating the log 90° when the log holding means releases the log to position the log with the second log reference plane parallel to the prescribed sawing plane to enable the saw to subsequently cut the log parallel with the second log reference plane normal to the second cut;

lateral positioning means operatively connected to the log holding means for selectively moving the held log laterally with respect to the longitudinal path to enable the saw to cut the log at selected distances from one of the log reference planes; and

drive means operatively connected to the saw carriage for moving the carriage back and forth along the longitudinal to sequentially saw the log into one or more timbers having a rectangular cross section.

4,262,573

DIGITAL ELECTRONIC MUSICAL INSTRUMENTS

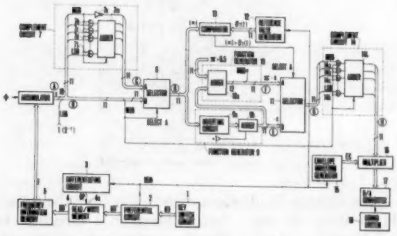
Masanobu Chibana, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 9, 1979, Ser. No. 10,738

Claims priority, application Japan, Feb. 17, 1978, 53-16615

Int. Cl.³ G10H *1/00*; G06F *1/02*

U.S. Cl. 84—1.01 **7 Claims**



1. An electronic musical instrument comprising means for generating a digital number which varies periodically and repeatedly at a rate corresponding to the frequency of a tone pitch of a depressed key of a keyboard of a musical instrument, a plurality of function generators, each function generator respectively providing as an output thereof a different linear function in response to and as a function of said digital number, means for periodically and repeatedly selecting among the different outputs of said function generators during and in synchronism with each period of variation of said digital number, and means for generating a musical tone based on the selected outputs of the function generators selected by said selecting means, whereby said reproduced musical tone is generated by switching between said different selected outputs of said function generators during and synchronously with each cycle of said musical tone and in synchronism therewith.

4,262,574

INTEGRATED I^2L CIRCUIT FOR SUPERIMPOSING AUDIO-FREQUENCY ELECTRICAL SIGNALS OF AN ELECTRONIC ORGAN

Wolfgang Hoehn, Kirchzarten, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 7, 1979, Ser. No. 101,374

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1978, 2854703

Int. Cl.³ G10H *1/18*

U.S. Cl. 84—1.01 **3 Claims**

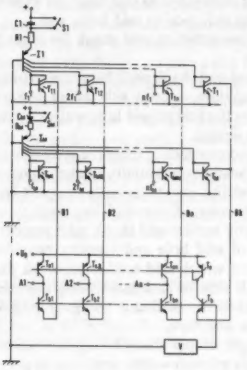
1. An integrated I^2L circuit for superimposing audio-frequency electrical signals in an electronic organ that has a plurality of keys and collecting bars, said circuit comprising:

a multi-collector transistor for each audio-frequency electrical signal, said transistor having a base, a first collector connected with its base and a second collector connected to a selected one of said collecting bars, said base having

applied thereto one of the audio-frequency electrical signals;

an injector system associated with each key, selected ones of said multi-collector transistors being associated with each key and being arranged alone within the range of action of the associated injector system whose injector current is switched with the aid of the key;

at least one further multi-collector transistor associated with each said injector system, said further multi-collector



transistor having a base connected to a first collector and a second collector connected to a compensating bar to which all of the second collectors of all further multi-collector transistors are connected; and

means connected to each of said collecting bars and said compensating bar for receiving signals therefrom and in response thereto for providing said superimposed audio-frequency electrical signals by forming the differences between the signals on the respective collecting bars and half the signal on the compensating bar.

4,262,575

QUASI-RANDOM PHASE SHIFT SYSTEM FOR AN ELECTRONIC MUSICAL INSTRUMENT

Eric R. Bean, South Bend, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Continuation of Ser. No. 834,245, Sep. 19, 1977, abandoned. This application May 7, 1980, Ser. No. 143,471

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.24 **7 Claims**

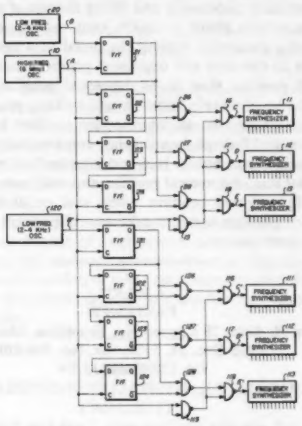
1. In an electronic musical instrument

(a) a source of relatively high frequency signals and a source of relatively low frequency signals;

(b) a plurality of frequency synthesizer means for producing a plurality of output signals each having frequencies at least as high as the upper octave note tones of the instrument;

(c) means for producing a plurality of different pulse trains of different particular frequencies, the frequency of each pluse train being substantially equal to that of the relatively high frequency signals and to each other, the frequency of each of the pulse trains being equal to that of the relatively high frequency signals except that one train has n pulses deleted, a second train has n plus at least one pulse deleted, a third train has n plus at least two pulses deleted for each cycle of the low frequency signal source, n being a poistive integer (n=1,2,3 . . .);

(d) means connecting the sources of high and low frequency signals to the producing means, and means connecting the producing means to the frequency synthesizer means with



different pulse trains being connected to different frequency synthesizers.

4,262,576

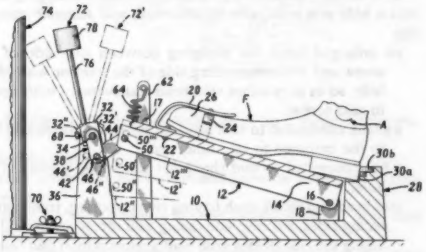
PERCUSSION INSTRUMENT STRIKING APPARATUS

Egon Gorsky, and William A. Gorsky, both of 306 W. Dudley Ave., Westfield, N.J. 07090

Filed Sep. 17, 1979, Ser. No. 76,398

Int. Cl.³ G10D *13/00*

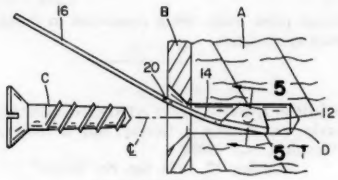
U.S. Cl. 84—422 R **8 Claims**



1. A foot operable percussion instrument striking apparatus comprising a base, a pedal having a toe portion and a heel portion, said pedal being pivotally mounted at its heel portion to said base for movement about a generally horizontal pedal pivot axis generally perpendicular to the heel-to-toe axis of the pedal, such movement extending between an elevated position and a depressed position, a clip affixed to said pedal and overlying the toe portion of said pedal in spaced relation thereto so that said clip and the toe portion of said pedal cooperatively define a space adapted to receive the toe portion of an operator's foot placed upon said pedal, a beater holder movably mounted to said base for displacement into and out of a striking position, positive linkage means for moving said beater holder in response to movement of said pedal so that said beater holder is in said striking position when said pedal is in said depressed position or in said elevated position but said beater holder is out of said striking position when said pedal is in any position between said elevated and depressed positions, and means for operatively connecting a beater to said beater holder whereby, when a beater is so connected to said beater holder and a percussion instrument is juxtaposed with said apparatus

so that such beater will contact such instrument when said beater holder is in said striking position, an operator may produce a sequence of beats by placing his foot upon said pedal and alternately depressing and lifting the toe of such foot in a pivoting motion about the ankle joint, said apparatus further comprising means for biasing the pedal to a neutral position between its elevated and depressed positions but closer to its elevated position than to its depressed position, said beater holder being moveable between said striking position, a fully-retracted position an an intermediate position between such positions, said linkage means being constructed and arranged so that said beater holder is in said intermediate position when said pedal is in said neutral position and said beater holder is in said fully-retracted position when said pedal is in a semi-depressed position between said neutral position and said depressed position.

4,262,577
FASTENER
Jonathon H. Katz, 78 Cypress St., Brookline, Mass. 02146
Filed Dec. 14, 1978, Ser. No. 969,420
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—15 **13 Claims**



1. A fastener for securing a wood or other self-tapping screw into a hole in a solid, non-hollow wall, said fastener comprising:

an enlarged head for wedging between one side of said screw and a corresponding side of the interior wall of said hole, so as to position said head transversely with respect to said screw,

a shank connected to said head for extending from said head to the entrance to said hole, and

a tail connected to said shank for extending outside of said hole,

said head and shank each having two opposing, transversely-facing sides, a screw side facing said screw and a wall side facing the side of said hole wall against which said fastener is to wedge,

said head protruding from the wall side of said shank to give said head a substantially thicker transverse dimension than said shank and to initially support the head end of said shank away from said engaged side of said wall and thereby incline said shank with respect to the longitudinal axis of said hole and thereby provide an inclined plane against which said screw can work during insertion,

the wall side of said head being tapered in the transverse direction to facilitate wedging said head between said screw and wall,

the length of said shank being selected to position said head deeply enough within said hole to prevent buckling of the surface of said wall when said screw is installed,

the length of said head being less than that of said shank,

said head and shank being constructed of a material firm enough to allow said head to be wedged between said screw and said hole wall but deformable enough to allow portions of said head to flow around and grip the threads of said screw, and

the length of said tail being sufficient for said tail to be manually grasped outside said hole to initially hold said head at its proper depth and to initially hold said shank in its inclined position while said screw is installed.

11. The method of using a fastener to affix a work material having a first hole therethrough to a solid, non-hollow wall having a second hole therein by using a screw inserted into said holes, said fastener comprising

an enlarged head for wedging between one side of said screw and a corresponding side of the interior wall of said hole, so as to position said head transversely with respect to said screw,

a shank connected to said head for extending from said head to the entrance to said hole, and

a tail connected to said shank for extending outside of said hole,

said head and shank each having two opposing, transversely-facing sides, a screw side facing said screw and a wall side facing the side of said hole wall against which said fastener is to wedge,

said head protruding from the wall side of said shank to give said head a substantially thicker transverse dimension than said shank and to initially support the head end of said shank away from said engaged side of said wall and thereby incline said shank with respect to the longitudinal axis of said hole and thereby provide an inclined plane against which said screw can work during insertion,

the wall side of said head being tapered in the transverse direction to facilitate wedging said head between said screw and wall,

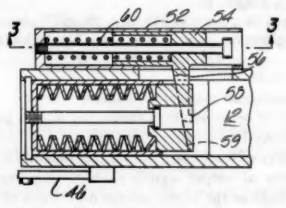
the length of said shank being selected to position said head deeply enough within said hole to prevent buckling of the surface of said wall when said screw is installed,

the length of said head being less than that of said shank,

grasping the protruding portion of said tail to hold said fastener in position, and

inserting said screw into said holes along the inclined screw-engaging surface of said shank so that said screw, working against the inclined plane formed by said shank, wedges said head against the wall of said second hole and flows around and grips said screw, thereby to hold said screw tightly within said second hole.

4,262,578
CARTRIDGE EJECTOR
William R. Bains, Lake Elsinore, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 8, 1979, Ser. No. 47,595
Int. Cl.³ F41D *11/00*
U.S. Cl. 89—1 K **6 Claims**



1. In a recoil-operated gun comprising a stationary receiver having a rear end and a forward end; a bolt carrier slidable in the receiver; resilient buffer means located at the rear end of the receiver to intercept the bolt carrier as said carrier nears the end of its recoil movement; a bolt mounted on the carrier; said bolt having a front face adapted to seat against the base of a cartridge; a cartridge extractor claw swingably mounted near the front end of the bolt to engage the upper side edge of a cartridge seated on the bolt front face; a cartridge ejector rod slidably mounted on the bolt below the extractor claw to engage the cartridge base near its lower edge; said resilient

buffer means including a plunger having a front face located in the path of the bolt carrier; said ejector rod being oriented so that its rear end projects rearwardly beyond the bolt carrier as the carrier nears the front face of the plunger; and manually-controllable charging means for drawing the bolt carrier rearwardly to cause the ejector rod to apply a striking force to the cartridge base and thereby eject the cartridge upwardly away from the bolt:

the improvement comprising mechanism response to motion of the charging means for increasing the striking force of the ejector rod; said mechanism comprising a piston slidably mounted alongside the receiver for movement parallel to the path taken by the bolt carrier; an ejector rod striker arm extending from the piston into a slot formed in the front face of the aforementioned plunger; spring means biasing the piston in a forward direction; a latch normally preventing the piston from advancing beyond a position wherein the striker arm surface is in the plane of the plunger front face; and means responsive to actuation of the charging mechanism for retracting the latch, whereby the piston is then spring-urged forwardly so that the striker arm applies a hammer force to the ejector rod.

4,262,579

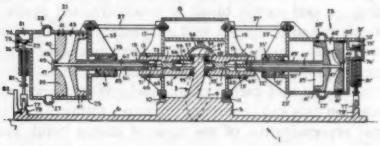
SINGLE ACTING STEAM ENGINE

Marion K. Harris, P.O. Box 2017, Atascadero, Calif. 93422

Filed Jun. 4, 1979, Ser. No. 44,865

Int. Cl.³ F04B *1/14, 21/02*

U.S. Cl. 91—480 **2 Claims**



1. A steam power engine comprising:

(a) a source of steam;

(b) a first cylinder forming a chamber and formed with an exhaust port commencing with said chamber;

(c) a first inlet valve communicating with said source of steam and said chamber for controlling the passage of steam into said chamber;

(d) a first piston disposed within the chamber of said first cylinder, said first piston being formed with an internal auxiliary exhaust passage opening adjacent to a working surface of said first piston and opening adjacent to a piston surface adjacent to an interior wall surface forming the chamber of said first cylinder, said auxiliary exhaust passage registering with said exhaust port of said first cylinder during a part of the stroke of said first piston within said cylinder;

(e) an auxiliary exhaust valve disposed within said chamber and seated on said first piston for controlling the passage of exhaust through said auxiliary exhaust passage of said first piston;

(f) power conversion means operatively responsive to the movement of said first piston for converting the reciprocating motion of said first piston to a rotary motion, said conversion mean comprising a swash plate rotated about an axis by the reciprocating movement of said first piston, said swash plate being formed with a first annular thrust surface on one face thereof, said one face of said swash plate being disposed in a plane which is angularly disposed relative to the axis of rotation of said swash plate, said first annular thrust surface having an axis coincident with the axis of rotation of said swash plate and the radial components of said first thrust surface being at right angles to the axis of rotation of said swash plate, force-transmitting means between said piston and said swash plate including a crosshead having an end portion adjacent said thrust surface;

(g) a cam carried by said swash plate radially outwardly from said axis;

(h) an outer thrust bearing disposed between said thrust surface and said crosshead radially outwardly from said cam;

(i) an inner thrust bearing disposed between said thrust surface and said crosshead radially inwardly of said cam, said outer thrust bearing being flat in a radial direction and of convex curvature in a circumferential direction to permit self-adjusting movement of said outer thrust bearing to accommodate variations in the surface of said thrust surface; and

(j) first auxiliary valve actuating means actuated in response to the movement of said power conversion means for operating said auxiliary exhaust valve in response to the rate of reciprocation of said first piston for controlling the passage of exhaust through said auxiliary exhaust of said first piston.

4,262,580

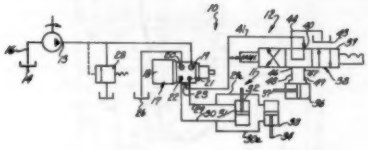
POWER STEERING SYSTEM WITH AUXILIARY POWER CAPABILITY

Raymon L. Goff, and Jim L. Rau, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 670,416, Mar. 25, 1976, abandoned, which is a continuation of Ser. No. 503,787, Sep. 6, 1974, abandoned, which is a division of Ser. No. 315,502, Dec. 15, 1972, Pat. No. 3,834,278. This application Dec. 27, 1977, Ser. No. 864,362

Int. Cl.³ F15B *11/00*

U.S. Cl. 91—532 **2 Claims**



1. A hydraulic power steering system for a vehicle comprising:

a supply pump,

a fluid controller in fluid communication with said supply pump,

a vehicle steering motor in fluid communication with said fluid controller,

an auxiliary fluid-actuated apparatus in fluid communication with said fluid controller,

said fluid controller having a housing with

(a) a fluid inlet connected with said supply pump,

(b) a fluid return port connected with reservoir,

(c) first and second working ports connected with opposite portions of said steering motor, and

(d) an auxiliary port connected with said auxiliary apparatus,

a metering unit in said housing,

a valve spool in said housing, said valve spool being unaffected by fluid pressure in said steering motor or said auxiliary apparatus and having

(a) first and second operative positions communicating said inlet with said metering unit and said metering unit with the first or second working port, respectively, and blocking communications with said second or first working ports, respectively,

(b) a neutral condition blocking said inlet port from said first and second working ports and from said metering unit and communicating said inlet port and the auxiliary port,

. said valve spool as it moves from said neutral condition

(a) progressively increasing communication between the inlet and the first or second working ports,

(b) establishing communication between the other of said working ports and said return port, and

(c) progressively restricting communication from the inlet to the auxiliary port and finally blocking said auxiliay port,

an input shaft operatively connected to said valve spool to effect movement thereof upon rotation of said input shaft;

a torsion bar connected at one end to said input shaft, and

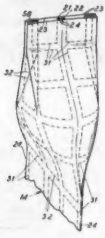
a follow-up mechanism for returning said valve spool to neutral at a rate which is independent of the fluid pressure in the vehicle steering motor or the auxiliary apparatus upon termination of rotation of said input shaft including a rotatable member connected at one end to said metering unit and at its other end with said valve spool and said torsion bar and which rotates upon fluid flow being directed to the metering unit.

4,262,581

METHOD AND APPARATUS FOR MAKING PRINTED GUSSET BAGS

Robert A. Ferrell, Shelbyville, Ind., assignor to KCL Corporation, Shelbyville, Ind.

Filed May 4, 1979, Ser. No. 36,005
Int. Cl.³ B31B *35/00*
U.S. Cl. 493—188 **19 Claims**



1. A method of making printed gusset-bottom bags from collapsed tubular bag material having longitudinal face-to-face panels joined to one another along opposite initial longitudinal side edges of the collapsed material and which edges are adapted for eventual separation of the panels from one another to define top ends for the bags, said panels being of sufficient width to derive complete bottom-gusseted bags from each panel when folded upon itself, and each panel being imprinted with indicia on bag wall areas and also imprinted with indicia on a respective gusset-bottom area intermediate the wall areas of each of the panels, the method comprising:

refolding said bag material by moving said imprinted panels away from one another and folding said joined opposite initial longitudinal side edges of the material into face-to-face relation, and folding said wall areas of each of said panels together into face-to-face relation upon one another;

infolding said gusset-bottom area of each of said panels into bottom-gusset position between said folded bag wall areas of each of said panels;

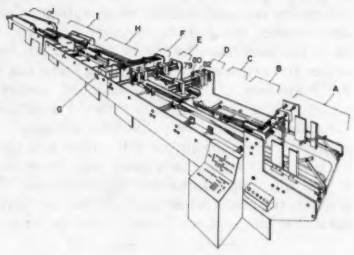
and separating the bottom-gusseted bag material along spaced transverse bag-side seal lines across the refolded bag material and along said face-to-face initial side edges and thereby providing individual bags having the gusset areas at their bottoms and the separated initial side edges at their tops so that when the bags are filled the bag wall areas and the bottom-gusset areas will expand and present to view not only the imprinted bag wall areas but also the imprinted expanded gusset-bottom area of each of the bags.

4,262,582

CARTON BLANK FOLDING AND GLUING SYSTEM

Seiji Sugimoto, Funabashi; Yoshio Ueda, Tokyo, and Kunio Somei, Yashio, all of Japan, assignors to Dainippon Ink and Chemicals Incorporated, Tokyo, Japan

Filed Mar. 9, 1979, Ser. No. 19,206
Claims priority, application Japan, Jun. 7, 1978, 53-67625
Int. Cl.³ B31B *3/74*
U.S. Cl. 493—25 **18 Claims**



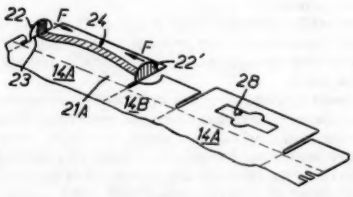
1. In a carton blank folding and gluing system having a feeder unit, a plurality of folding and gluing sections having operating attachments and a stacking unit; means for continuously conveying carton blanks to said sections, said carton blanks being of various types and sizes, the improvement comprising; means to move the operating attachments required for working on said carton blank to predetermined positions in said sections and to retract said attachments not required for working on said carton blank; and control means for determining predetermined positions of all of the attachments required for working on said carton blank, said control means storing said position data and generating an output following receipt of a signal representative of the type of carton blank and the dimensions of particular parts of said carton blank to selectively move said operating attachments to operating or retracted positions.

4,262,583

METHOD FOR FIXING A HANDLE TO A PACKING

Jean Lazerand, Rochechouart, and Andre Risbec, Neuilly-sur-Marne, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.

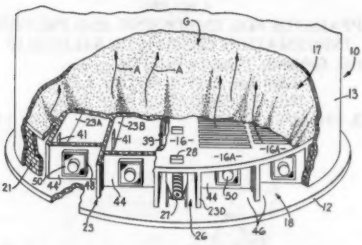
Division of Ser. No. 878,192, Feb. 16, 1978, Pat. No. 4,166,570.
This application Apr. 20, 1979, Ser. No. 31,895
Claims priority, application France, Feb. 22, 1977, 77 05114
Int. Cl.³ B31B *1/86*
U.S. Cl. 493—444 **5 Claims**



1. Method for fixing a handle to a packing comprising at least one closing flap which handle projects from said closing flap; said method comprising providing on two opposed edges of said one flap ears which are located in the extension of each other, each beyond a fold line, mounting a strip in the flat condition on said flap and said ears, fastening said strip to said ears, folding said ears about their respective fold lines over

onto a side of said flap on which side said strip is located, and fastening said folded-over ears to said flap.

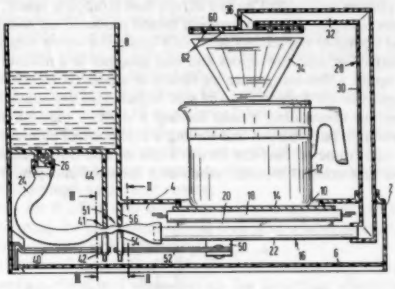
4,262,584
GRAIN TOWER AERATION STRUCTURE
Roger H. Dunbar, 54686 Holly Dr., Elkhart, Ind. 46514
Filed Aug. 8, 1979, Ser. No. 64,957
Int. Cl.³ E04H *7/00*
U.S. Cl. 98—55 **8 Claims**



1. A grain tower for aerated storage of grain, comprising:
a base slab;
a hollow tower having a substantially cylindrical peripheral wall upstanding from said base slab;
a perforated floor dividing said tower into an upper grain storage compartment and a lower compartment, said perforated floor being spaced above said base slab by a plurality of upstanding walls dividing the space between said base and perforated floor into air chambers;
upstanding bulkheads transversely spanning ones of said air chambers, and dividing same into relatively larger air distribution chambers and relatively smaller air intake chambers with the latter in part bounded by said tower peripheral wall;
means defining air intake openings through said peripheral wall of said tower to each of said air intake chambers;
fans contained within said tower, said fans being located at said bulkheads for impelling air from said air intake chambers through openings in said bulkheads into said air distribution chambers and thence through the perforate part of said perforate floor to aerate grain in said grain storage compartment.

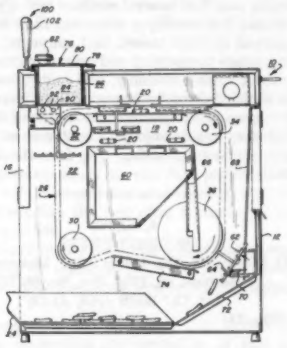
4,262,585
ELECTRIC COFFEE MAKER
Udo Leuschner, Traunwalchen, and Alfons Zinsberger, Traunreut, both of Fed. Rep. of Germany, assignors to Bosch Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
Filed Mar. 13, 1979, Ser. No. 20,095
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811497
Int. Cl.³ A47J *31/00*
U.S. Cl. 99—280 **13 Claims**

4. Electric coffee maker, having a fresh-water tank from which water is transported through a cold-water line, to a water heater, and from there through a hot water line, to a coffee filter, the combination therewith of a heating device acting on the hot water line, means to activate the heating device, and time delay means disposed in the cold water line which time delay means is independent of pressure in said cold water line and which sets full water transport into operation with a time delay after the heating device acting on the hot-water line has been activated and, wherein the water heater serves as the heating device, and wherein time delay means is



a timer and a valve device disposed in the cold-water line for starting the full water transport, actuated by the timer.

4,262,586
BAKING APPARATUS
Dye O. Miller, South Barrington, and Ronald Godsen, Lombard, both of Ill., assignors to A. J. Antunes & Co., Addison, Ill.
Filed Aug. 10, 1979, Ser. No. 65,417
Int. Cl.³ A47J *37/00*
U.S. Cl. 99—345 **13 Claims**

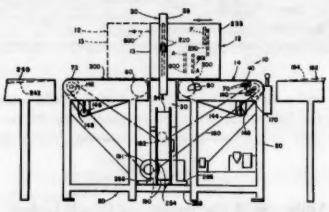


1. An apparatus for baking food products comprising
a housing
means for conveying said product through said housing,
means for baking said product, and
means for dispensing material onto said product, said dispensing means including a material container moveably mounted in said housing, said container further including an engagement member for engaging said conveying means to shake said container.

4,262,587
STRAPPER FEED CONVEYOR
B. Carson Russell, 12821 Marcy St., Omaha, Nebr. 68154
Continuation of Ser. No. 804,319, Jun. 8, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,069
Int. Cl.³ B65B *13/06*
U.S. Cl. 100—4 **5 Claims**

1. A strapper feed conveyor comprising: a frame, said frame having two belt conveyors thereon traveling in a same direction, each of said belt conveyors having a belt, the exit end of one of said conveyors being spaced from the entrance end of the second one of said conveyors, drive means on said frame comprising a motor for synchronously driving said conveyors,

said frame being absent in a space between said conveyors for providing a strapping space, a strapping machine mounted on said frame for applying a strap around an object on said conveyors as said object passes across said strapping space, automatic strap position controlling means mounted on said frame and operably correlated with said conveyor drive means and controlling said conveyors and said strapper in a manner so as to apply a first-strap onto an object at a desired location with respect to the forward end of said object, said automatic strap-position controlling means having a control element means forming a part thereof and having a first control element fixed to said frame so that the forward end of said object depresses said first control element when said forward end passes over



said first control element whereby the position of the forward end of said object moving through said machine determines automatically the position on said object of a first-strap, and means urging said first control element into a position above the belt of said first conveyor whenever such an object is not on said control element means, said automatic strap-position controlling means comprising said control element means and an air powered timing assembly, said timing assembly having adjustable means thereon for changing the effect of air pressure in said timing assembly whereby the timing of the application of said first-strap to said object is variable so as to accomplish the selective spacing of said first-strap from the forward end of said object.

4,262,588

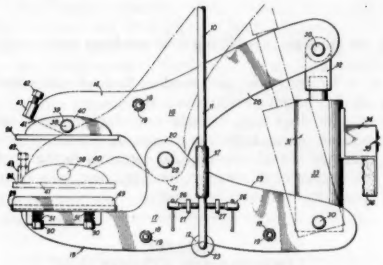
SCISSOR PRESS

William D. McDonald, Rte. 1, Box 322C, Monroe, Oreg. 97456

Filed Nov. 30, 1979, Ser. No. 98,747

Int. Cl.[3] B30B *1/08, 15/06*

U.S. Cl. 100—234 **10 Claims**



1. A press for installing nailing plates to truss lumber joints and the like comprising a pair of opposing jaws which are pivotally interconnected between their ends for relative swinging movement toward and away from each other, a suspension harness carrying said jaws and adapted for connection with an overhead movable support, a power actuator for the jaws interconnecting rear extensions thereof on one side of the pivot axis of the jaws, an upper jaw plate rockably mounted on the uppermost of the jaws forwardly of the jaw pivot axis and with the rocker axis of the upper jaw plate parallel to said jaw pivot axis, adjustable stop means for the upper jaw plate on said uppermost jaw and limiting rocking movement of the upper jaw plate in one direction, a lower jaw plate on the lowermost jaw in opposing relationship to the upper jaw plate, and means to finely adjust the level and the angle of the lower jaw plate relative to the upper jaw plate.

4,262,589

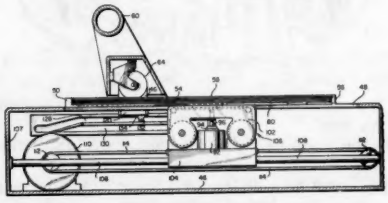
APPARATUS FOR EMBOSSING AND PRINTING INFORMATION ON CHARGE SALES SLIP

Robert G. Gebhardt, Franklin Park, Ill.

Filed Jan. 8, 1979, Ser. No. 1,531

Int. Cl.[3] G06K *15/02;* **B41F** *3/04*

U.S. Cl. 101—45 **2 Claims**



1. Apparatus for preparing a packet of layered credit card sales tickets with transaction information in machine readable form, the packet including at least a topmost sales ticket for the credit card issuer, the customer's credit card having customer identification information on a raised character printing indicia portion on the credit card front side and in magnetic stripe on the reverse side thereof, said apparatus comprising:

a frame, having mounting positions locating the customer's credit card partially beneath said packet of sales tickets with said raised character printing indicia portion on the credit card front side underlying said packet and said magnetic stripe on the credit card reverse side being exposed beyond said packet;

manual embossing means, including an embosser movably mounted on said frame across said sales tickets and said underlying raised character printing indica portion on said credit card to emboss imprint the customer identification information on one side of said sales tickets;

a magnetic read head;

means mounting said magnetic read head to said embosser to lie below, immediately adjacent said exposed magnetic stripe on said credit card reverse side and magnetically readably scan said customer identification information on said exposed magnetic stripe as said embosser is moved across said credit card;

the magnetic readable scanning of said exposed magnetic stripe and the emboss imprinting of said sales tickets being accomplished in one simultaneous pass of said embosser and said magnetic read head across said credit card;

printing means movably mounted to said frame below said packet of sales tickets;

said printing means including an impact printer with machine readable indicia; and

control means connected to said magnetic read head and said printing means for coupling said customer identification information from said magnetic read head to said impact printer to imprint said information in machine readable form on the bottom side of said lowermost sales ticket.

4,262,590

AUXILIARY PRINTING UNIT FOR A PRINTING PRESS, IN PARTICULAR A ROTARY PRINTING PRESS

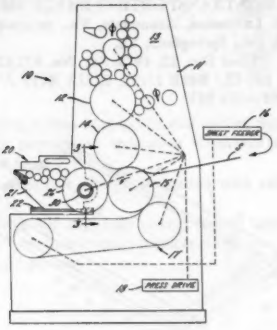
Carl-Heinz Bruckner, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 103,767, Dec. 14, 1979. This application Jan. 28, 1980, Ser. No. 115,876

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2853901

Int. Cl.³ B41F *13/14, 13/20, 13/28*

U.S. Cl. 101—76 14 Claims



1. An auxiliary printing unit and press having provision therefor including, in combination, a press having a press drive and a press main frame formed of a pair of frame members mounting an impression cylinder and providing a seating surface adjacent thereto, an auxiliary press unit having a press unit frame dimensioned to fit on the seating surface between the main frame members with stop means thereon to define a working position, a printing cylinder in the auxiliary press unit having a press unit shaft journaled in the frame thereof, the press unit shaft having a cylindrical recess at its end, a coupling assembly journaled in the press main frame for interconnecting the press drive and the the press unit shaft, the coupling assembly having an internally splined hollow drive shaft coupled to the press drive, the coupling assembly further having an externally splined mandrel slidable endwise in the drive shaft between inwardly extended and retracted positions and having a radially expandible hub at its inner end dimensioned to mate with the recess in the press unit shaft to form a driving connecting therewith when the mandrel is inwardly extended, the mandrel and the press unit shaft having off-center registering elements thereon which are also axially engaged when the mandrel is inwardly extended, register indicia including indicia on the mandrel and on the press unit shaft so positioned that upon relative rotation to a position of alignment the registering elements are aligned with one another in readiness for axial engagement, and manually operated means in the mandrel for sequentially (a) shifting the mandrel from its retracted position to its extended position and (b) expanding the hub to insure a tight centered driving connection with the press unit shaft.

4,262,591

OFFICE LABEL PRINTER AND DISPENSER

Robert C. Cook, 3601 Towne Park Cir., Pomona, Calif. 91767, assignor to Robert C. Cook, Redondo Beach, Calif.

Filed Dec. 18, 1978, Ser. No. 970,809

Int. Cl.³ B41L *47/46*

U.S. Cl. 101—92 1 Claim

1. A simplified individualized label printing and/or dispensing apparatus for butt-cut pressure sensitive labels, said apparatus having both a label-dispensing mode and a rewind mode, comprising:

an outer casing for said apparatus;

a cassette containing a continuous supporting web and a series of successive butt-cut pressure sensitive labels mounted on said web;

means for supporting said cassette within said casing to dispense said web and labels;

replaceable large scale memory means for storing successive different blocks of information to be applied respectively to successive ones of said labels;

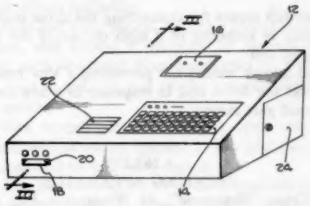
means including a printhead for applying said blocks of stored information to successive labels;

means for feeding said web past said printhead to receive one of said blocks of information on each label;

a peeling blade having a peeling edge, mounted adjacent a slot through said outer casing;

means for feeding said web over said peeling blade and for stopping the movement of said web with a label extending through said slot;

first photocell means located beyond the peeling edge of said peeling blade and close thereto for detecting whether a label is extending from said peeling blade through said slot;



means responsive to the energization of said first photocell means for enabling the advancing of said web, and printing an additional label with information contained in the next block of stored information, said web feeding means being responsive solely to said first photocell means to feed said web to extend the label through said slot;

means for rewinding the web after it passes the printhead and peeling blade;

second photocell means including a light and photocell pair for detecting the transmission of illumination along a path through said web and labels between said cassette and said printhead;

means responsive to the output of said second photocell means for controlling the operation of said apparatus during the rewind mode; and

means for moving said peeling blade so that it does not engage said web and for concurrently actuating a switch to modify the mode of operation of said apparatus from the dispense mode to the rewind mode, and to print labels and store said printed labels on said rewinding means, and to disable said first photocell means and to shift control of the web feeding means to said light and photocell pair.

4,262,592

HAMMER DRIVE APPARATUS FOR IMPACT PRINTER

Shigeyuki Araki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 26,240

Claims priority, application Japan, Apr. 6, 1978, 53-40616

Int. Cl.³ B41J *7/92*

U.S. Cl. 101—93.03 11 Claims

1. A print hammer drive apparatus including a print hammer drive coil, characterized by comprising:

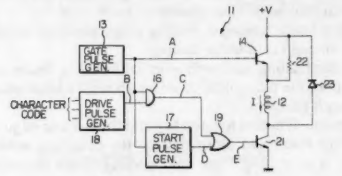
print gate pulse generator means for generating a print gate pulse;

print start pulse generator means for generating a print start pulse in response to a leading edge of the print gate pulse, the print start pulse having a shorter duration than the print gate pulse;

print drive pulse generator means for generating a train of high frequency drive pulses having a duty cycle which increases as a printing area of a character to be printed increases;

first gate means for gating the drive pulses therethrough during a duration of the print gate pulse;

second gate means for producing a logical sum of the print start pulse and an output of the first gate means;



first switch means for connecting the drive coil to a power source in response to a high output of the second gate means; and

second switch means for providing a low resistance path across the drive coil in response to a low output of the second gate means.

4,262,593

PRINTING APPARATUS

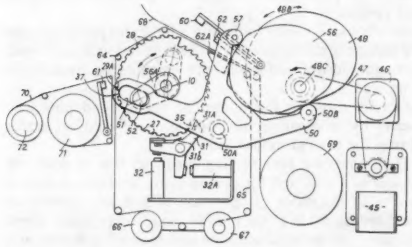
Henry Gross, "Braewood", 45 Winnington Rd., and Samuel Gross, "Springcroft", 43 Winnington Rd., both of London, England

Continuation of Ser. No. 923,506, Jul. 10, 1978, abandoned. This application Sep. 11, 1979, Ser. No. 74,453

Claims priority, application United Kingdom, Jul. 29, 1977, 31995/77

Int. Cl.[3] **B41J** *3/42*

U.S. Cl. 101—99 **3 Claims**



1. In a printing apparatus comprising a series of printing wheels having printing characters on their peripheries, each said wheel having an axial bore and having a recess opening into said bore and having a series of teeth engageable by pawls, and means to actuate the pawls to stop the wheels when said wheels are moved to their printing positions, said wheels being mounted on a shaft which passes through said respective bore and carries a series of spring pressed detents, each detent being engageable in a recess of a respective printing wheel for driving a wheel, the improvement which consists in that two similar sets of printing characters and one set of said teeth are provided all on the periphery of each said printing wheels whereby the teeth occupy about the same angular circumferential distance as is occupied by each set of said characters, rotary cam means are provided which move to drive the said shaft through a first angular movement of the shaft in a forward direction said angular movement being slightly more than said angular circumferential distance, said actuating means operating during said first angular movement to actuate said pawls to stop said wheels and thereby disengage said detents from said recesses, said cam means have a shape which during continued movement of the cam means holds said shaft stationary, printing means for printing from both sets of characters while said shaft is held stationary, and said cam means have a shape which with further continued movement of the cam means said shaft is driven by the cam means in the reverse direction during which said detents are returned into the recesses.

4,262,594

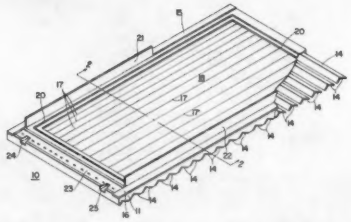
METHOD AND APPARATUS FOR MANIPULATING AND TRANSPORTING IMAGE MEDIA

Robert M. Landsman, Annandale, Va., assignor to LogEscan Systems, Inc., Springfield, Va.

Filed Dec. 22, 1978, Ser. No. 972,628

Int. Cl.[3] **B41B** *15/32, 21/32;* **B41F** *27/12*

U.S. Cl. 101—382 MV **7 Claims**



1. A flexible vacuum carrier for transporting and supporting a plurality of image recording media as they are flexed from a planar state to a concave curvature, said carrier comprising:

a. a flexible support member defining a first reference plane for receiving first and second image recording media, wherein said second medium overlies the first,

b. a plurality of longitudinal braces mounted in said support member to provide structural stiffness along one planar axis of said support member, said support member being flexible in its second planar axis to enable carrier to be flexed to a concave state,

c. a pair of flexible reference strips mounted on said carrier support member, said reference strips having a greater modulus of elasticity than either said support member or said first and second image recording media, said strips defining a neutral axis of curvature as said carrier is flexed from a planar state to a concave state, said neutral axis lying above said first reference plane when said carrier is planar, and at a smaller radius than said first reference plane when said carrier is flexed to its concave state, said strips being attached to the inner sides of said carrier perpendicular to said longitudinal braces,

d. a plurality of vacuum passageways defined by said carrier that open at said first reference plane to exhaust air trapped between said image recording media and said carrier,

whereby the flexible carrier and said first and second recording media will be tensioned when said carrier is flexed and elongated around the concave curvature defined by the neutral axis of said reference strips.

4,262,595

ANTI TORPEDO DEVICE

Ernest P. Longerich, Chatsworth, Calif., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 12, 1978, Ser. No. 950,653

Int. Cl.[3] **F42B** *22/00*

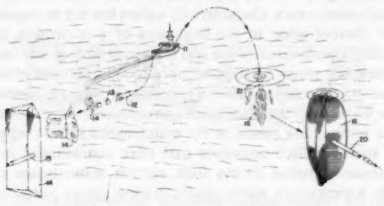
U.S. Cl. 102—10 **28 Claims**

1. An anti torpedo device comprising:

at least one flexible barrier member;

means connected to said barrier member to selectively cause said barrier member to be positioned in a substantially flat, generally vertical plane;

sensing means responsive to said device being immersed in water to activate said means for placing said barrier member in a generally vertical plane;



torpedo sensing means coupled to said barrier member and adapted to provide an indication whenever a torpedo strikes said barrier;

at least one explosive charge associated with said barrier; and

means coupling said explosive charge to said torpedo sensing means to detonate said explosive whenever a torpedo strikes a said barrier.

4,262,596

OVERHEAD ATTACK MISSILE

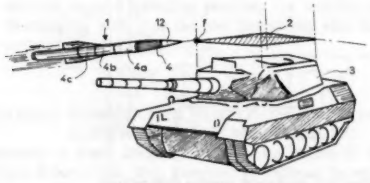
Michel Allier, Garches, and Didier Lursat, Limours, both of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Oct. 18, 1978, Ser. No. 952,427

Claims priority, application France, Oct. 18, 1977, 77 31279

Int. Cl.³ F42B *13/30*

U.S. Cl. 102—56 SC **6 Claims**



1. A guided missile capable of passing at a known distance from a target at a known speed while being corrected in rolling for overhead attack particularly against slow targets such as tanks or firing turrets comprising

at least one hollow charge in the guided missile for detonation over the summit region of the target including

means to direct the force of said charge in a radial, unidirectional manner,

triggering means in the missile to initiate detonation of said hollow charge at a point in time for the head of the burst to effectively reach the target on a calculated spot,

pyrotechnical dissymmetry means connected to said triggering means and located with said hollow charge to act on detonation waves to preserve the straightness of the burst to the target despite movement of the missile to cause succeeding elements of the burst to hit substantially the same impact point until at least the time when perforation of the armored plating has been passed.

4,262,597

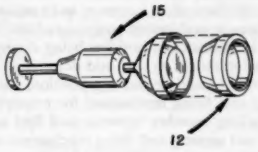
PRE-WRAPPED TWO-PIECE RING AIRFOIL PROJECTILE OF NON-HAZARDOUS MATERIAL

Donald N. Olson, Lutherville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 25, 1979, Ser. No. 6,326

Int. Cl.³ F42B *11/100*

U.S. Cl. 102—92.6 **9 Claims**



1. A ring airfoil projectile structure, comprising:

a leading structure including:

a cylindrical-like body means, having a passageway therethrough, and having a plurality of payload cavities therein each separated from each other by a partition, each open at the top and on the exterior side of said body means;

a metal-like covering for the exterior open side of said cavities, said covering bonded to the plurality of said partitions and to said body means;

a paper breakband covering over said metal-like covering and extending over a portion of said body means;

a rubber-like seal bonded to the top of said plurality of payload cavities and to the interior surface of said metal-like covering to completely enclose and seal said payload cavities; and

a payload material within each of said plurality of payload cavities; and

a trailing structure attached to said leading structure by suitable means.

4,262,598

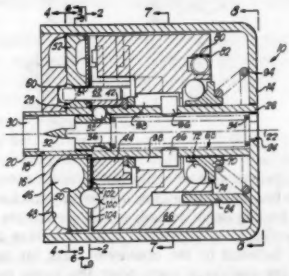
DELAY FUSE

Raymond H. Burg; Arthur M. Lohmann, both of Hopkins, and William C. George, Minnetonka, all of Minn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1979, Ser. No. 29,189

Int. Cl.³ F42C *15/22*

U.S. Cl. 102—246 **20 Claims**



1. An impact delay fuse for use in a spin launched explosive shell to delay detonation of the explosive charge of the shell until after impact of the shell with a target, said delay fuse comprising:

a hollow housing adpated to be positioned in said shell for

rotation therewith in a first direction about a shell spin axis when the shell is launched and begins to spin;

detonation means for detonating the explosive charge of said shell, said detonation means being movable between a loaded position and a detonating position, and being biased toward said detonating position;

a locking member coaxially mounted within said housing for rotation between a first position and a second position disengaged from said detonator means so that said locking member when in said first position being in engagement with said detonation means so as to maintain said detonator means in said loaded position and said locking member when in said second position being disengaged from said detonation means so that said detonation means is free to be moved to said detonating position; and

a sensing and firing mechanism for controlling rotation of said locking member between said first and second positions, said sensing and firing mechanism comprising:

an inertia member within said housing;

inertia mounting means for mounting said inertia member coaxially within said housing to rotate said inertia member with said housing in said first direction when said shell is launched and to rotate said inertia member in said first direction for a predetermined distance relative to said housing when said shell impacts the target;

inertia bias means for biasing said inertia member for rotation in a second direction relative to said housing, said second direction of rotation being opposite from said first direction of rotation; and

coupling means for engaging said locking member with said inertia member for rotation therewith only when said inertia member is rotated in said second direction relative to said housing.

4,262,599

CONVEYOR SYSTEM WITH A MAINTENANCE STATION

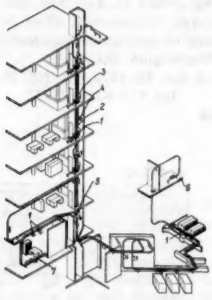
Dieter Ahr, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,191

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2744072

Int. Cl.³ B61J *3/00*

U.S. Cl. 104—88 **8 Claims**



1. A conveyor system comprising a route network of profile rails with branching locations, conveyor carts for travel on the rails and having drive devices which are fed via current paths of the profile rails, adjustable route selection characterizing elements fastened to the conveyor carts for controlling the path of the conveyor carts over the route network, route selection scanning and control devices selectively responsive to said route selection characterizing elements and associated with the branching locations of the route network, and at least one maintenance station for servicing of the conveyor carts and interposed in the route network, wherein the improvement comprises a maintenance scanning and control device which is arranged at a location of the route network which is passed frequently by conveyor carts, said conveyor carts having maintenance status characterizing means selectively adjustable for selectively providing first and second scannable maintenance characteristic values corresponding to first and second maintenance phases, said maintenance scanning and control device being selectively adjustable to respond to said first and second maintenance characteristic values but not to respond to either thereof prior to the beginning of a respective corresponding maintenance phase and being operable in one current maintenance phase to respond only to said first maintenance characteristic value set after a specific preceding maintenance phase to reroute the associated conveyor cart to the maintenance station, and means at the maintenance station whereby each such rerouted conveyor cart after maintenance in said maintenance station during such current maintenance phase has its maintenance status characterizing means permanently adjusted to said second maintenance characteristic value until such conveyor cart is again selected for maintenance.

4,262,600

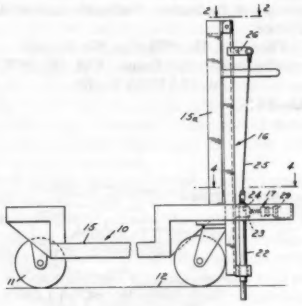
TOWCART CONVEYOR SYSTEM

Edward J. Carney, Bloomfield Hills, Mich.; Harbans L. Mediratta, Windsor, Canada, and Donald G. Heximer, Howell, Mich., assignors to Acco Industries Inc., Trumbull, Conn.

Filed Oct. 31, 1979, Ser. No. 89,979

Int. Cl.³ B61B *10/04*

U.S. Cl. 104—172 BT **12 Claims**



1. A towcart conveyor system comprising

a conveyor movable below a floor surface and having a pusher,

a plurality of towcarts,

each towcart comprising a body having wheels for movement along said floor surface,

a towpin support assembly,

means for pivoting at its upper end said towpin support assembly at a point spaced vertically above said cart such that the normal pivotal movement subtends a very small angle having a cosine of substantially one,

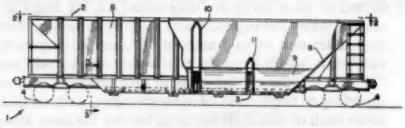
said towpin support assembly including a towpin,

and a combined spring and shock absorber assembly interposed between said towpin support assembly and a portion of said body forwardly of said towpin support assembly and operable to absorb the shock of engagement of said pusher of said conveyor with said towpin and operable to return said towpin support assembly and said towpin to its original position when the pusher becomes disengaged from said towpin.

4,262,601
CAM ACTUATED RAILWAY HOPPER CAR LOCK MECHANISM

Roy W. Miller, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 6, 1979, Ser. No. 27,684
Int. Cl.[3] B61D 7/06, 7/18, 7/26, 7/30
U.S. Cl. 105—241.2 14 Claims



1. A railway hopper car including a longitudinally extending hopper structure having a bottom discharge opening; including first and second doors hingedly connected to the hopper for swinging movement of the doors between respective closed and opened positions,

linkage means interconnecting said doors for conjoint movement,

locking means for securing the doors in the closed position, comprising:

a locking cam slidably mounted on said hopper structure for movement between respective door locked and unlocked positions,

a locking member having an outer portion connected to said inner door, and an inner portion including a cam follower engaging the cam in the door locked position,

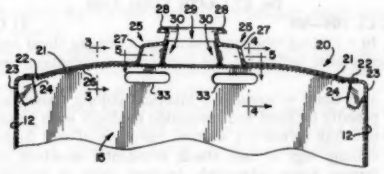
door positioning means for disposing the locking member with respect to the locking cam concurrect with moving the hopper door to the closed door position to permit the locking cam to hold the locking member in the door closed position, and

actuating means operatively connected with said cam for reciprocable movement of said locking cam along the hopper structure between respective locked and unlocked positions, said locking member, upon movement of the cam to the locked position, engaging said cam to secure the doors in the closed position, and upon movement of the cam toward unlocked position, the locking member disengaging said cam thereby permitting said doors to move to the opened position.

4,262,602
COVERED HOPPER CAR PARTITION ATTACHMENT STIFFNESS SHEET MODIFIER

Babgaunda A. Patil, Birmingham, Ala., and Phillip G. Przybylinski, Schererville, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 25, 1979, Ser. No. 88,268
Int. Cl.[3] B61D 7/00
U.S. Cl. 105—248 8 Claims



1. A railway hopper car including a body having sidewalls, a hopper and a roof sheet including flanges at its outer edges, a top side plate connected to the flanges and the sidewalls, said roof sheet including an elongated roof step portion having an upstanding coaming including a hatch opening, and a top framing bar connected to the underneath portion of said roof sheet, the improvement comprising:

a partition sheet assembly extending vertically within said hopper,

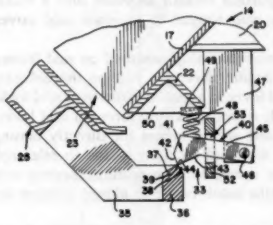
means for connecting said partition sheet assembly at its upper end to said top framing bar, and

said partition sheet assembly including at its upper end means for providing flexure thereby acting to minimize the stiffening effect of said roof step portion contiguous with said top framing bar to enhance uniform flexure of said partition sheet assembly for reducing stress concentrations therein.

4,262,603
DOOR LOCKING ARRANGEMENT FOR RAILWAY HOPPER CAR

George W. Morse, Westville, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 26, 1978, Ser. No. 955,057
Int. Cl.[3] E05C 3/16; B61D 7/02
U.S. Cl. 105—310 8 Claims



1. In a railway hopper car having a hopper structure including a downwardly and outwardly extending slope sheet and a discharge opening, and a door hingedly connected to said structure for movement relative to said opening between open and closed positions, the improvement of a locking mechanism for said door comprising:

keeper means connected to said door,

a latch member,

means movably connecting said latch member to said hopper structure,

said latch member having a lower camming surface,

said keeper means including an upper camming surface adapted to engage said lower camming surface in the closed position of said door,

a locking bar movably supported on said car,

said locking bar having a stop means in a lock position engaging said latch to lock the same against movement,

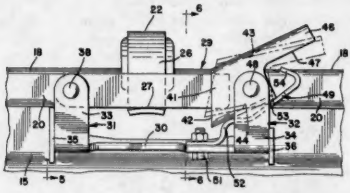
said locking bar being movable to an opening position wherein said stop means is displaced from said latch and the door is free to move by gravity thereby camming said latch member to a disengaged position relative to said keeper means, and

biasing means supported on said hopper structure and urging said latch member to its locked position, said biasing means being operative during periods when the hopper structure is empty in cooperation with said upper camming surface to hold said door in its closed position while said locking bar is in said opening position.

4,262,604
RAILWAY CAR ROOF HATCH COVER LOCK

Babgaunda A. Patil, Birmingham, Ala.; Richard L. Tuck, Sr., Highland, Ind., and Dilip T. Naik, Birmingham, Ala., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jun. 20, 1979, Ser. No. 50,841
Int. Cl.³ B61D *39/00, 17/16;* **E05B** *65/18;* **E05C** *3/16*
U.S. Cl. 105—377 **18 Claims**



1. In a hatch construction including a frame having a hatch opening, a hatch cover hingedly connected to said frame for closing said opening

a lock strap having one end portion hingedly connected to said frame and including a central portion engaging and overlying said cover in a locking position,

said locking strap including a free end portion having a flat tongue projecting outwardly from said cover, an improved hatch locking mechanism comprising:

a lever pivotally mounted on said frame and including a central portion thereof movable into a locking position engaging said tongue to maintain said cover in a lock position,

a lock member movably mounted on said frame,

said lock member having a portion thereof adapted to engage said lever in a locked position of said lock member to exert a downward locking force on said lever,

and releasable spring means for directly biasing said lock member into said locked position to releasably maintain said lever in said locking position thereby securely maintaining said hatch cover in closed relation to said hatch opening.

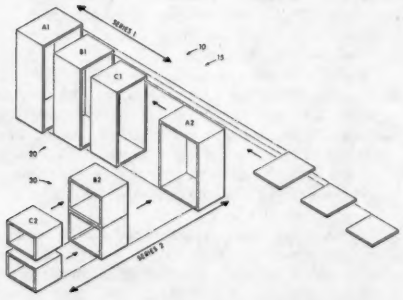
3. The invention in accordance with claim **1**, wherein

said lock member is movable to an unlocked position wherein said portion is disengageable from said lever and said lever is movable to an unlocking position relative to said tongue of said locking strap.

4,262,605
NESTABLE UNITIZED SHELVING SYSTEM

Filip L. Sokol, 1620 Mapleton Ave., Boulder, Colo. 80302

Filed May 14, 1979, Ser. No. 38,786
Int. Cl.³ A47B *47/00*
U.S. Cl. 108—91 **1 Claim**



1. A nestable shelving system comprising rectangular units, each of said units having sides of a predetermined wall thickness, said system comprising:

a first series of three shelving units (**A1**, **B1**, and **C1**), said first series having each unit varying in height from the next taller unit by an amount termed "k", where K amount equals at least twice said wall thickness, and having such unit varying in width from the next wider unit by said amount "k" each of said shelving units having the same predetermined shelf depth,

a second series of three shelving units (**A2**, **B2**, and **C2**), said second series having each unit varying in height from the next taller unit by said amount "k", and having each unit varying in width from the next wider unit by said amount "k", the widths of each unit in said second series corresponding to the widths of corresponding units in said first series each of said shelving units having the same aforesaid predetermined shelf depth,

the largest unit of second series being capable of containing all of the smaller units of said second series and being capable of engaging the interior of the smallest unit of said first series in an orthogonal relationship so that the openings of said first units are orthogonal to the openings of said second units when nested,

said three units **A1**, **B1**, and **C1** of said first series having the following congruent relationships:

1. $a_{y1}=a_x+b_x$
2. $b_{y1}=a_x+c_x$
3. $c_{y1}=b_x+c_x$

where a_{y1}=height of Unit **A1**

a_x=width of Unit **A1**=width of Unit **A2**

b_{y1}=height of Unit **B1**

b_x=width of Unit **B1**=width of Unit **B2**

c_{y1}=height of Unit **C1**

c_x=width of Unit **C1**=width of Unit **C2**

said three units **A2**, **B2** and **C2** of said second series having the following congruent relationships:

1. $a_{y2}=2c_x$
2. $2c_{y2}=a_x$

where:

a_{y2}=height of Unit **A2**

c_{y2}=height of Unit **C2**

wherein said first series of units is related to said second series of units by:

1. $c_{y1}=a_{y2}+k$
2. $c_x=b_{y2}+k$

where:

b_{y2}=height of unit **B2**, said first and second units when un-nested being capable of being stacked in a number of different configurations, each of said configurations having a uniform height throughout,

and wherein the depth of each unit is less than the value of c_x minus twice said wall thickness.

4,262,606
CONVERTIBLE FOLDING TABLES

Hollis C. Hodson, P.O. Box 114, Amo, Ind. 46103

Filed Jan. 2, 1979, Ser. No. 635
Int. Cl.³ A47B *57/00, 3/00*
U.S. Cl. 108—99 **11 Claims**

1. In a folding table combining an X-legged stand and supported planar surface(s), the improved combination comprising:

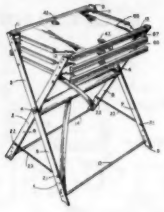
a. said stand wherein two identical oblong frames are oppositely inclined and assembled medially with pivot bolts into link formation, vertical members of said frames becoming legs of said stand, horizontal members of said frames being selectively located pairs of leg-attached rungs, one rung per pair per frame, a single pair of bottom rungs interconnecting said legs near the bottom of said stand, whereas three pairs of top rungs are respectively disposed near the top of said stand and interconnect said legs in three descending parallel and level planes;

b. selective elastic reins selectively located and attached

above said lower rungs and between those legs of each X-leg set, for bridling planar spread of said stand; and

c. one to three oblong portable trays, each of a uniform size and shape, each said tray being reversible and invertible, and hereinafter regarded as a standard tray which includes,

(1) a standard tray-bed, flat, oblong, and having edges and sides selectively shortened by open contoured corners, and having lock apertures selectively located near said edges,



(2) standard rails of selective length attached to said edges, which said rails jut above and below said tray-bed and into said open corners,

(3) handles of selective length attached to said sides, which said handles jut above and below said tray-bed and into said open corners, and

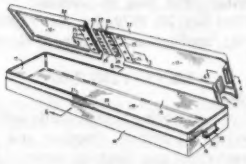
(4) hangbutton locks disposed through said lock apertures, and furthermore, said three trays being concurrently mountable and supportable on said three pairs of top rungs, retainable and lockable thereon in normal attitude, namely, major axis of any said tray parallel to its monopolized pair of rungs.

4,262,607

SAFETY DEPOSIT BOX

Murray A. Krebs, Willowdale, Canada, assignor to Chubb Industries Limited, E. Brampton, Canada

Filed May 21, 1979, Ser. No. 40,486
Int. Cl.[3] B65D *51/04*; A45C *1/12*
U.S. Cl. 109—58 **4 Claims**



1. A safety deposit box consisting of molded plastic components, namely:

a tray component defining an open-topped receptacle having front and rear end walls and a pair of longitudinal side walls providing a peripheral rim,

first and second complementary lid components defining a cover coextensive with the receptacle opening and providing a peripheral flange overlying said end and side walls,

the first lid component being sealed to the rim and permanently covering a rear portion of said opening,

the second lid component being hingedly connected to the first lid component about a transverse hinge axis for closing a front portion of said opening,

a hinge component comprising a one-piece molding of resilient plastics material having a flexible medial portion defining said transverse hinge axis and forwardly and rearwardly directed locking tongues,

first and second hinge retaining members integrally formed respectively with said lid components, the locking tongues being respectively engaged and retained by said members,

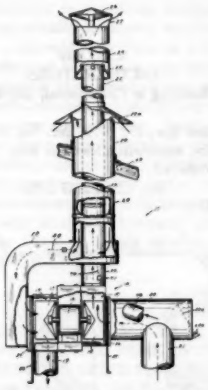
and releasable latching means cooperating with said front end wall and a complementary portion of the second lid component for releasably holding the second lid component in the closed position, wherein each of the hinge retaining members is formed as a flat strip defining a slot with the underside of the lid to which it is secured, each of the hinge retaining members being formed with an abutment edge, the tongues of the hinge component being engageable in said slots and being formed with integral studs engageable with a snap action with said abutment edges to be retaining thereby.

4,262,608

METHOD AND APPARATUS FOR POWERED FLUE PRODUCTS EXHAUST AND PREHEATED COMBUSTION AIR SUPPLY

Bert W. Jackson, 1219 Garfield Rd., Lansing, Mich. 48917

Filed Jun. 14, 1979, Ser. No. 48,508
Int. Cl.[3] F23L *17/00*; F23H *3/08*
U.S. Cl. 110—162 **5 Claims**



1. In a combination powered flue products exhaust and preheated combustion air supply assembly for use in association with a heating furnace comprising:

(a) a compartmented main housing, said main housing defining a combustion air supply compartment and flue products exhaust compartment therein, said combustion air supply compartment provided with a combustion air intake fan mounted therein and said flue products exhaust compartment provided with a flue products exhaust fan mounted therein;

(b) a double-shafted drive motor mounted in said main housing so as to simultaneously drive said combustion air intake fan and said flue products exhaust fan;

(c) an outside air intake pipe provided on said main housing in open communication with said combustion air supply compartment, said outside air intake pipe configured to extend to the exterior of the building in which it is mounted so as to provide outside air to said combustion air supply compartment;

(d) a combustion air supply duct provided on said main housing in open communication with said combustion air supply compartment, said combustion air supply duct configured to convey combustion air to the furnace area;

(e) a flue products exhaust supply duct provided on said main housing in open communication with said flue prod-

ucts exhaust compartment, said flue products supply duct connected to the flue products exhaust outlet of the furnace so as to deliver hot flue exhaust products therefrom to the said flue products exhaust compartment;

(f) a flue products exhaust pipe provided on said main housing in open communication with said flue products exhaust compartment, said flue products exhaust pipe concentrically mounted within said air intake pipe so as to extend therethrough to the exterior of the building to deliver the hot flue products to the outside atmosphere, said flue products exhaust pipe adapted to transmit heat from hot flue exhaust products passing outwardly therethrough to preheat combustion air passing inwardly through said air intake pipe; and

(g) automatic air pressure controlled dampers provided in said combustion air intake pipe and said flue products exhaust pipe so as to selectively close said intake air and flue products exhaust pipes when said fans are not running.

4,262,609

INCINERATORS

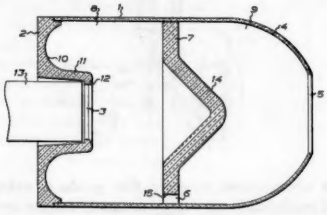
Allan Inovius, Building le Continental, Block A, Monte Carlo, Monaco

Filed Apr. 19, 1979, Ser. No. 31,314

Claims priority, application Sweden, Apr. 26, 1978, 7804761; Apr. 26, 1978, 7804763

Int. Cl.³ F23G 5/00

U.S. Cl. 110—244 **3 Claims**



1. Incinerator apparatus comprising a casing including a substantially cylindrical mantle, an inlet wall sealing one end of said mantle and the defining a central inlet opening for gaseous or particulate, combustible material together with combustion air, an outlet wall sealing the other end of said mantle and defining a central outlet opening for combustion products, and a partition wall within said casing dividing the interior of said casing into an inlet chamber adjacent said inlet wall and an outlet chamber adjacent said outlet wall, said inlet wall having, on its side facing the inlet chamber, an annular depression surrounding the inlet opening, the defining surface of the depression being smoothly rounded in cross-section, said outlet wall being domeshaped with the concave side facing the outlet chamber, the central portion of said partition wall being formed as a conical mantle whose outside faces the outlet chamber and whose inside faces the inlet chamber, and said partition wall having at least three edge recesses distributed around the periphery of said partition wall and defining together with said cylindrical mantle communication passages between the inlet and outlet chambers.

4,262,610

METHOD OF REDUCING THE SULFUR EMISSIONS FROM BOILERS FIRED WITH BROWN COAL AND, MORE GENERALLY, FROM BOILERS FIRED WITH LOW-RANK SOLID FOSSIL FUELS AND USED IN THE PRODUCTION OF ELECTRIC POWER

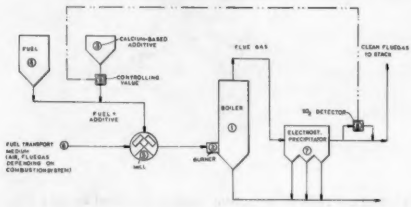
Klaus Hein, Bergheim, and Ansgar Schiffers, Aachen, both of Fed. Rep. of Germany, assignors to Rheinisch-Westfälisches Elektrizitätswerk AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 8,764, Feb. 1, 1979, abandoned. This application Jun. 8, 1979, Ser. No. 46,603

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2807076

Int. Cl.³ F23B 7/00

U.S. Cl. 110—342 **6 Claims**



1. A method of reducing sulfur emissions in a boiler fired with low-rank coal as a fuel, especially for a power plant, which comprises the steps of:

(a) mixing particulate calcium oxide with low-rank coal having a water content greater than about 20% by weight in a mill-drying stage wherein a mixture thereof is formed, comminuted and dried;

(b) thereafter pneumatically introducing the mill-dried mixture into the firebox of the boiler through a burner thereof; and

(c) burning said mixture in said firebox.

4,262,611

METHOD OF AND APPARATUS FOR WASTE INCINERATION

Dieter Kuhnert, Sinsheim; Lothar Meiler, Rauenberg; Herbert Rebholz, Leimen, and Günter Zapf, Mannheim, all of Fed. Rep. of Germany, assignors to Kraftanlagen Aktiengesellschaft, Heidelberg, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,378

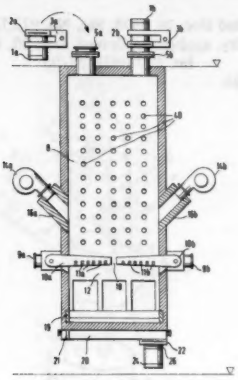
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844447

Int. Cl.³ F23G 7/00

U.S. Cl. 110—346 **10 Claims**

5. A method of incinerating at least partly solid wastes, in an installation having a pyrolysis chamber and a combustion chamber, and swivelling gate elements between said chambers, comprising: drying, degassing and gasifying said waste in the pyrolysis chamber; subsequently burning both the gaseous and the solid pyrolysis products in the combustion chamber, recirculating waste heat of the exothermic incineration process to the combustion chamber through the walls of the pyrolysis chamber in such a way that endothermic drying and degassing and exothermic gasification processes are started, moving said swivelling gate elements to open passages of different widths through which pass the solid and gaseous pyrolysis products, developing a glow bed of sufficient depth and temperature and maintaining the same above the gate elements to ensure efficient gasification and to weaken the solidity of the solid pyrolysis residues in such a way that they can, upon movement of the gate elements, be reduced to a particle size allowing a complete incineration, supplying secondary combustion air behind the gate elements in the direction of the solids and gas flows, and establishing exhaust gas partial flows adapted to be

set to different temperatures by cooling and leading the same through boreholes provided in the walls of the pyrolysis chamber, to the center of the waste for direct heat exchange therewith.



4,262,612

LABEL INSERTING DEVICE FOR SEWING MACHINES

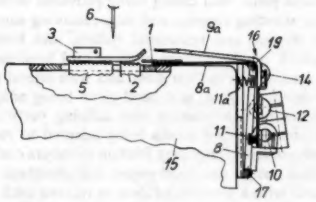
Helmut Schips, Steinacherstrasse 340, 9327 Tubach, Switzerland

Filed May 31, 1978, Ser. No. 911,118

Claims priority, application Switzerland, Jun. 2, 1977, 6825/77

Int. Cl.³ D05B *35/06*

U.S. Cl. 112—114 **10 Claims**



1. In a sewing machine having a feed mechanism for feeding in a given path material to be sewn, a presser foot arranged in opposition to said feed mechanism and cooperating therewith to provide a mouth for said material and to hold said material during sewing and a label feed for providing labels in a direction perpendicular to the feed of the material and a point within the path of said material feed in advance of said presser foot, clamp means for insuring the proper sewing of labels to the underside of said material comprising a pair of tongs arranged one above the other, the lower tong being arranged to reciprocate in a plane below the mouth of said presser foot, the upper tong being pivotably mounted to said lower tong to swing with respect to it and conjointly move with it in a path parallel to the path of movement of said material from a first position corresponding to the point at which said labels enter the path of movement of said material to a second position corresponding to the mouth of said presser foot whereby said labels may be grapsed and moved by said clamp means into contact with said material and held thereto by the cooperating feed mechanism and presser foot.

4,262,613

APPARATUS FOR CONTROLLING THE TRANSVERSE MOVEMENT OF A FABRIC SUPPORTING CARRIAGE IN A QUILTING MACHINE

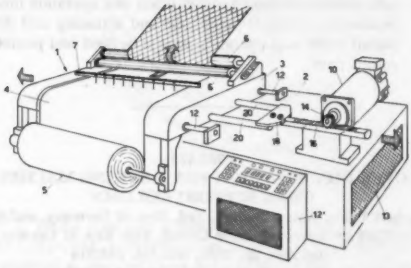
Giannino Landoni, Fagnano Olona, Italy, assignor to Meca, S.n.c., Cassano Magnago, Italy

Filed Feb. 5, 1980, Ser. No. 118,964

Claims priority, application Italy, Feb. 9, 1979, 20080 A/79

Int. Cl.³ D05B *21/00*

U.S. Cl. 112—118 **6 Claims**



1. An apparatus for controlling transverse movement of a fabric supporting carriage in a quilting machine, including driving rolls for longitudinally advancing the fabric, the apparatus comprising a pulse-width modulation actuator; a programmable microcomputer; a pinion, a rack fixed to said carriage, said rack engaging said pinion; a d.c. electric motor having its shaft directly connected to said pinion to rotate same and which is fed current pulses having fixed amplitude but duration and polarity depending respectively upon length and direction of desired displacement of said carriage supplied by said pulse width modulation actuator under control of said programmable microcomputer, said programmable microcomputer being operatively arranged to control advance of said driving rolls for the fabric to obtain stitches according to predetermined designs or patterns.

4,262,614

PATTERN STITCH SEWING MACHINE HAVING MEANS FOR DETERMINING TIME OF OPERATOR INFLUENCE TO EFFECT VARIED MACHINE CONTROL

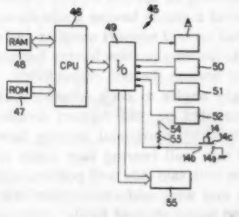
Takao Sugaya; Chikao Yamashita, and Noriyuki Yoshida, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Dec. 5, 1979, Ser. No. 100,434

Claims priority, application Japan, Dec. 21, 1978, 53-161464

Int. Cl.³ D05B *3/02, 69/22*

U.S. Cl. 112—158 E **8 Claims**



1. A sewing machine having stitch forming instrumentalities including an endwise reciprocative needle and a work feeding mechanism for transporting a workpiece to be sewn in timed relation with a reciprocal movement of the needle, drive means for imparting movement to said stitch forming instrumentali-

ties to produce a specific pattern, and needle positioning means for moving said needle to arrive at at least one predetermined position and arresting the needle thereat, said sewing machine comprising:

an operable means disposed on the front side of said machine;

means for discriminating whether the operation time when said operable means is operated is within a predetermined time or not; and

control means responsive to said discrimination for actuating said needle positioning means when said operation time is within said predetermined time and actuating said drive means when said operation time is beyond said predetermined time.

4,262,615

COVER CONSTRUCTION FOR A SEWING MACHINE WORK SUPPORT COLUMN

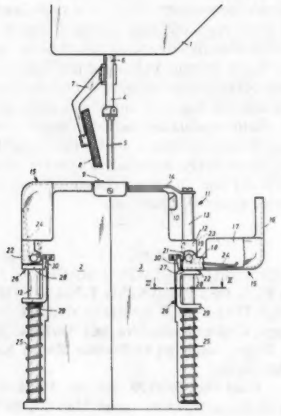
Herbert Wenz, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,014

Claims priority, application Fed. Rep. of Germany, May 3, 1979, 7912750[U]

Int. Cl.³ D05B *75/00*

U.S. Cl. 112—260 **4 Claims**



1. A cover construction for a sewing machine which includes a work support column below a sewing thread guide needle, comprising an upright support member, a substantially L-shaped cover member having a side-forming portion pivotally supported on said support member and a cover plate portion, said side-forming portion having bearing faces defined on the back and bottom thereof, respectively, which are at substantially right angles to each other, a locking member displaceably mounted on said support member and having an upper, substantially horizontal bearing face adapted to bear against said side wall bearing face when said cover is in an open position with said side wall portion oriented substantially horizontally and with said cover plate oriented substantially vertically and being adapted to also bear against said bottom bearing surface of said side wall portion when said cover is closed, first spring means urging said locking member against said cover, and second spring means urging said cover member to rotate to an open position, said locking member being movable against said first spring means to release said cover for automatically opening said cover by said second spring means.

4,262,616

SAILING-BOAT MAST

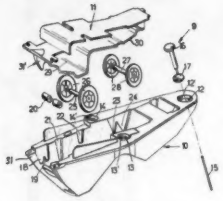
Christian de Rougemont, Paris, France, assignor to Isomat, France

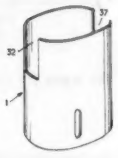
Filed Dec. 26, 1978, Ser. No. 972,727

Claims priority, application France, Dec. 30, 1977, 77 39762

Int. Cl.³ B63B *15/00*

U.S. Cl. 114—94 **3 Claims**





1. A sailing boat mast comprising a tubular section and an ancillary component comprising a masthead which is welded to said section, said masthead comprising anchoring means, forming an integral part thereof, for the standing rigging, said anchoring means comprising a duct defining a flared-out and rounded inlet orifice in which is mounted a knuckle-joint assembly for retaining the end portion of standing rigging, said end portion being provided with a terminal enlargement which corresponds in shape to said flared-out portion, said masthead also comprising a casing welded to the tubular section and a removable head-piece, said casing being provided with means for anchoring standing rigging, and slots receiving supporting axle-pins of sheaves and horizontal rollers, said head-piece defining a cheek on the bottom edge of said head-piece for holding the sheave pins in their slots, and with lateral guiding means for running rigging, said head-piece being adapted to lock the sheave pins in position and defining partition-wall means, said lateral guiding means being adapted to receive a spinnaker halyard and comprising friction members cast in one piece with said casing and head-piece, said masthead casing being provided with a plurality of slots to receive each sheave pin and each roller, whereby the sheave pins and rollers can be positioned within the casing as a function of size of the mast on which said casing is mounted and as a function of inner and outer utilization of the halyards.

4,262,617

DEVICE FOR SIMPLIFYING THE SETTING AND TAKING IN OF SAILS

Johan A. Svensson, Smedjegatan 2, 652 23 Karlstad, Sweden

PCT No. PCT/SE78/00051, § 371 Date Jul. 9, 1979, § 102(e) Date Jul. 9, 1979, PCT Pub. No. WO79/00272, PCT Pub. Date May 17, 1979

This PCT application filed Jul. 9, 1979, Ser. No. 118,804

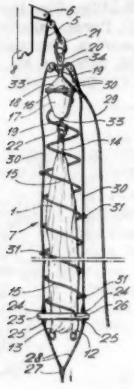
Claims priority, application Sweden, Nov. 8, 1977, 7712574

Int. Cl.³ B63H *9/10*

U.S. Cl. 114—104 **12 Claims**

1. A device for setting and furling a sail of a sailing boat having a mast and associated running rigging, said device comprising an expandable open helix having a length when longitudinally expanded which is at least about the length of said sail and a diameter large enough to fit over said sail, one end of said helix being attached by running rigging to said mast and located proximate the head of the sail, expanding means

for pulling the opposite end of the helix to longitudinally expand said helix around and over said sail to hold the sail in a furled condition during furling of said sail, and contraction



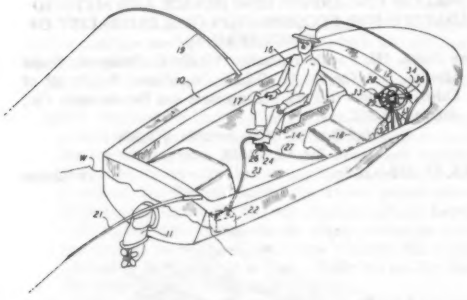
means for longitudinally contracting said helix from the furling, expanded condition to a location proximate said sailhead during setting of said sail.

4,262,618

REMOTE CONTROL STEERING ATTACHMENT FOR A STEERING WHEEL

William P. VanDerZee, 3804 S. Wood Dr., Racine, Wis. 53403

Filed Aug. 22, 1979, Ser. No. 68,730
Int. Cl.³ B63H *25/00*
U.S. Cl. 114—144 R **9 Claims**



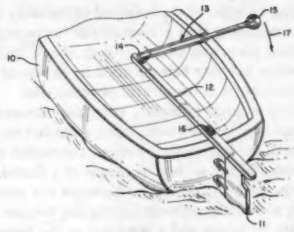
1. A remote control steering attachment for a steering wheel having a center column and a wheel rim, comprising a driving motor to be disposed on the axis of said steering column, a source of power for said motor and connected therewith, a remote type of control connected with and between said motor and said source of power for controlling power to said motor, a cross member attachable to said steering wheel rim to rotate therewith and having said motor mounted on said cross member and connected therewith for rotating the latter in the steering of said steering wheel, a clutch interconnected between said motor and said cross member for selective drive connection and release between said motor and said cross member, and a restrainer member connected with said motor for securing said motor against its own reaction in driving said cross member.

4,262,619

SAILBOAT HIKING STICK AND STABILIZING CLIP

Harrison W. Hine, 585 S. Burlingame Ave., Los Angeles, Calif. 90049

Filed Sep. 13, 1979, Ser. No. 75,103
Int. Cl.³ B63H *25/06*
U.S. Cl. 114—144 R **4 Claims**



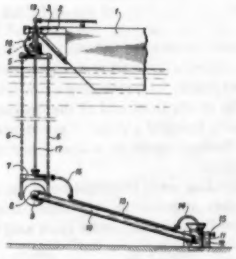
3. A hiking stick and stabilizing clip for a sailboat rudder tiller comprising, in combination: elongated means adapted to be coupled at one end to an end portion of said rudder tiller and terminating at its other end in a handle, said handle having a first engagement means; and a clip adapted to be secured at a desired distance from said one end portion of the tiller at least equal to the overall length of said elongated means said clip having second engagement means for cooperation with said first engagement means to thereby hold said elongated means in a stabilized position when said handle is brought into engagement with said clip, said first engagement means on said handle including resiliently spreadable side walls defining a cavity with opposed ribs adjacent to the entrance edges of the side walls, said second engagement means being defined by a post having recessed areas on opposite sides for receiving said ribs when urged into said cavities.

4,262,620

MOORING DEVICE

Urias G. Nooteboom, The Hague, Netherlands, assignor to Blue Water Terminal Systems N.V., Curacao, Netherlands Antilles

Filed Feb. 23, 1979, Ser. No. 14,481
Claims priority, application Netherlands, Feb. 28, 1978, 7802200
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **7 Claims**



1. A mooring device comprising:

a body with buoyancy which at least partly extends above water level;

a connecting member connecting the body to an anchor at the bottom of the body of water, the anchor having a conduit mounted therein;

the connecting member comprising an arm pivotably connected to the anchor about a horizontal axis to extend

obliquely upwardly from the anchor, the pivotal connection between the arm and the anchor being such that the arm can pivot exclusively about the horizontal axis and is prevented from pivoting about a vertical axis relatively to the anchor, and a tension member having a lower end pivotably connected to the upper end of the arm by means of a universal joint comprising only two horizontally extending pivot axes for the tension member to extend vertically upwardly from the arm, the tension member having an upper end connected to the body by means of a joint including two perpendicular horizontal axes, and a vertical pivot axis which extends above water level;

the tension member being loaded by means of a weight for maintaining it in its vertical position; and

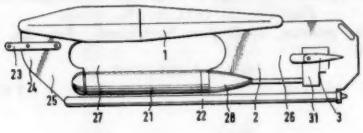
a medium conduit extending along the connecting member, the medium conduit comprising a conduit extending along the arm and having its lower end connected to the conduit mounted in the anchor by means of a flexible hose bridging the pivotal connection between the arm and the anchor, a conduit extending along the tension member and having its lower end connected to the upper end of the conduit extending along the arm by means of a flexible hose bridging the universal joint between the tension member and the arm, and a tube leading to the body, the tube having its lower end connected to the upper end of the conduit extending along the tension member by means of a flexible hose bridging the horizontal axes of the joint between the body and the tension member.

4,262,621

REMOTE-CONTROLLED SUBMERSIBLE DROGUE

Ulrich Tolkiehn, and Uwe Wüstefeld, both of Hamburg, Fed. Rep. of Germany, assignors to Gernot Dittberner, Hamburg, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 770,427
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—245 **7 Claims**



1. A remote controlled submersible drogue for carrying probes, for example for marine research, comprising:

attachment means for connecting a tow line of a towing craft at the tip of the front end of the drogue;

a lifting body being of a shape to generate dynamic lift when towed through water by a line connected to said attachment means;

means providing static stabilization of the drogue, including a flat plate attached to said lifting body and extending downwardly and rearwardly from said lifting body;

an adjustable elevator;

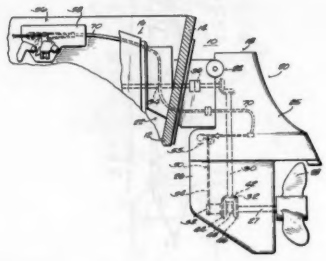
and said lifting body having a cross sectional rhombus shape as seen in a vertical plane perpendicular to the towing direction that in its stable position is a quadrangle consisting of two isosceles triangles with a common vertical base and is dynamically laterally stable by said shape constituting means for generating a restoring torque from the dynamic water pressure occurring during towing whenever the drogue is rotated from its stable position about an axis aligned with the towing direction.

4,262,622

MARINE PROPULSION DEVICE INCLUDING IGNITION INTERRUPTION MEANS TO ASSIST TRANSMISSION SHIFTING

Robert G. Dretzka, South Milwaukee; James L. Holt, Bristol, both of Wis., and Guy D. Payne, Lake Villa, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 30, 1979, Ser. No. 25,343
Int. Cl.³ B63H *5/06*
U.S. Cl. 440—1 **41 Claims**



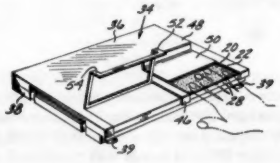
32. Apparatus for assisting transmission shifting in a marine propulsion device including an internal combustion engine and a transmission having a bevel gear and a clutch dog movable between a neutral position out of engagement with the bevel gear and a drive position in full engagement with the bevel gear, said apparatus comprising a first member movable in response to clutch dog movement, a second member movable in response to actuation by an operator and connected to said first member for movement in common therewith and for movement relative to said first member, and means for interrupting engine ignition in response to relative movement between said first and second members.

4,262,623

INKLESS FINGERPRINTING DEVICE AND METHOD ADAPTED FOR RECORDATION OF A PLURALITY OF FINGERPRINTS

Jay Smith, III, Pacific Palisades; Virgile L. Hedgcoth, Santa Monica, and Thomas H. Grimm, Manhatten Beach, all of Calif., assignors to Park Management and Development Co., Atherton, Calif.

Filed Dec. 11, 1978, Ser. No. 968,361
Int. Cl.³ B41K *1/00*
U.S. Cl. 118—31.5 **19 Claims**



1. An apparatus for recording fingerprints of a person, the apparatus comprising:

first means for applying a solution of a first chemical to at least one fingerprint pattern area of a person;

a recording surface onto which the solution of the first chemical is deposited in substantial conformity with the fingerprint pattern, and

second means for containing a second chemical and for exposing the recording surface having the deposited solu-

tion of the first chemical thereon to a gaseous phase of the second chemical,

the second chemical having a melting point above the operating temperature of the apparatus and sufficient vapor pressure to cause significant sublimation of the second chemical, the gaseous phase of the second chemical capable of reacting with the first chemical to yield a colored reaction product whereby the fingerprint pattern of the person is developed on the recording surface and is recorded.

4,262,624

METHOD OF FORMING PUNCTURE PREVENTING LAYER FOR TIRE AND APPARATUS EMPLOYED THEREFOR

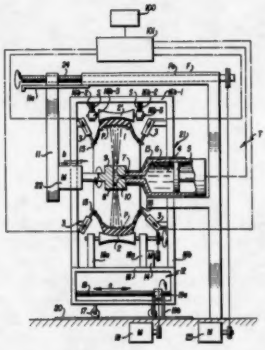
Kozi Soeda, Nishinomiya; Katuyuki Hoshikawa, Hyogo, and Akitaka Kimura, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Division of Ser. No. 865,133, Dec. 28, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 958,972

Claims priority, application Japan, Dec. 30, 1976, 51-158497

Int. Cl.[3] B05C *7/02*

U.S. Cl. 118—44 **3 Claims**



1. An apparatus for coating the inner surface of a tire casing with a puncture sealing material having a high viscosity, said apparatus comprising

means for extruding a stream of said puncture sealing material,

means disposed to intercept and break up the resulting stream into a spray comprising a first disc having an opening therethrough for passage of said stream and disposed across the stream with the opening aligned therewith, and a second disc disposed across the stream spaced downstream of and facing the first disc, said second disc having a flat surface which intercepts the stream, means for rotating the disc having said flat surface whereby the stream impinging thereon is propelled radially outwardly from the space between the discs as a spray,

means for supporting and rotating a tire casing having an annular inner open side with the open side disposed to receive the said spray, said supporting and rotating means comprising a pair of spaced rollers disposed to press against the radial outer surface of the tire casing diametrically opposite each other, means for biasing a first of said pair of rollers against the tire casing, means for rotating the second of said pair of rollers to rotate the tire casing, means for moving the said rollers relative to the said spray for interception thereof, and

means for spreading the open side of the casing comprising a pressure cylinder having a reciprocating piston therein, said piston fixed to a piston rod which extends externally of the pressure cylinder and having a rotary disc fixed to its exposed end and disposed on each side of the tire casing adjacent said open side for spreading the casing apart to enlarge the opening for reception of the spray, and means for supplying a fluid under pressure to the pressure cylinder for actuating the piston.

4,262,625

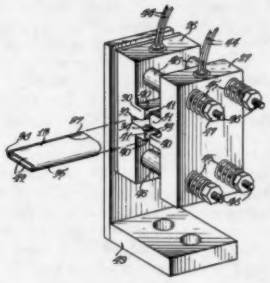
SOLDER COATING APPARATUS

James J. Carravetta, Racine, Wis., and Edward A. Robinson, Bloomington, Ill., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Sep. 7, 1979, Ser. No. 73,217

Int. Cl.[3] C23C *1/04*

U.S. Cl. 118—101 **7 Claims**



1. Apparatus for applying a uniform coating of predetermined thickness of liquid solder to the outer surface of a flat tube at and adjacent to the opposite side edges of the tube, comprising: spaced heated platens comprising opposite shaping die members forming a slot embracing said outer surface at and adjacent to the opposite side edge areas of a said tube that is coated with said liquid solder, said slot being substantially uniformly spaced from said tube a distance that is substantially equal to said predetermined thickness of solder on the tube; spacing means for spacing said members apart a distance equal to the width of the coated tube between said side edges, said die members having means providing a gap in the platens at at least one of the flat sides of said tube; means for drawing the solder coated tube between said heated platens; and means for heating said platens in the vicinity of said tube during passage of said tube therebetween to a temperature above the melting point of said solder.

4,262,626

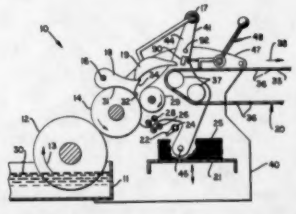
GLUER LOCKDOWN

Paul Wahnschaff, 3202 Marjan Dr., Atlanta, Ga. 30340

Filed Jan. 14, 1980, Ser. No. 111,530

Int. Cl.[3] B05C *1/02*

U.S. Cl. 118—247 **7 Claims**



1. An apparatus for applying glue and the like to sheet-like material comprising a wetting roll, and applicator roll for receiving glue from said wetting roll, a presser roll for rolling engagement with said applicator roll, feed roll for feeding

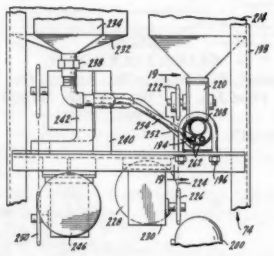
sheet material between said presser roll and said applicator roll, at least one conveyor roll with a conveyor belt extending thereabout for receiving the sheet material from said applicator roll, and pick means for directing the sheet material from said applicator roll to said conveyor belt, a stationary frame including spaced side sections, said wetting roll and said applicator roll being mounted at their ends to the side sections of said stationary frame, a movable frame including spaced side sections, and at least some of said feed rolls and said presser roll and said conveyor roll being mounted at their ends to the side sections of movable frame with said movable frame being pivotably mounted to said stationary frame about a pivot offset from the center of gravity of said movable frame so that said movable frame is normally urged by gravity to move to its operating position with respect to said stationary frame where said rolls feed sheet material through said apparatus and apply glue to the sheet material and said movable frame can be lifted against the force of gravity to an open position where the rolls of said movable frame are spread apart from the rolls of said stationary frame for cleaning and the like, the improvement therein comprising a lock down assembly pivotably mounted on said stationary frame for holding said pivotable frame in its operating position, said lock down assembly comprising a shaft rotatably mounted at its end portions to the side sections of said stationary frame and including at each of its ends a lock leg with said lock legs extending normal to the length of said shaft and parallel to each other, said lock legs being pivotable with said shaft between positions where the ends of the lock legs engage the spaced side sections of said movable frame and hold said movable frame in its operating position with respect to said stationary frame and positions where the ends of the lock legs are out of engagement with the spaced side sections of said movable frame and the movable frame is pivotable with respect to said stationary frame, said lock legs each including extensible portions whereby the effective lengths of said lock legs are adjustable.

4,262,627

APPARATUS FOR COATING THE INSIDE OF PIPE

Charles L. Roeder, Glendale; William J. Siefert, Waukesha, and Frederik Theijsmeijer, Racine, all of Wis., assignors to Rexnord, Inc., Milwaukee, Wis.

Division of Ser. No. 809,570, Jun. 24, 1977. This application Apr. 6, 1978, Ser. No. 894,150
Int. Cl.³ B05C 7/02
U.S. Cl. 118—318 **14 Claims**



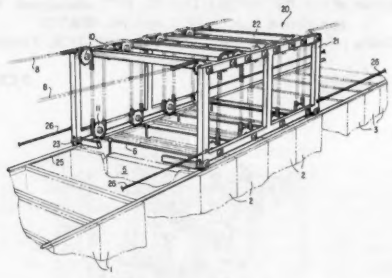
1. An apparatus for coating the inside of a pipe with a wear-resistant material which includes a resin and hardener to form a matrix material and wear-resistant particles embedded therein, the apparatus including a frame, means on the frame for supporting a pipe to be coated about a generally horizontal axis and for rotating the pipe in such position, a probe with a mixing head on one end thereof to carry the wear-resistant material inside of the pipe, means for creating relative axial motion between the probe and the pipe so that substantially the entire inner surface of the pipe may be coated, passages on the probe for separately conveying the resin, hardener and particles to the mixing head, including an airstream conveying system passage for the particles, a merging chamber on the probe before the mixing head to which the resin and hardener passages are connected so that the matrix will be formed prior to the introduction of the particles, means in the mixing head for injecting the matrix into the particle airstream in the mixing head at about 90° thereto to form the wear-resistant material, and an outlet for the mixing head so that the material will be deposited on the inside of the pipe.

4,262,628

ELECTROCOATING APPARATUS

Paul Dukes, 6693 Embassy Ct., Maumee, Ohio 43537, and Paul Youngpeter, 5125 Trellis Way, Sylvania, Ohio 43560

Filed May 1, 1979, Ser. No. 35,088
Int. Cl.³ B05C 3/02
U.S. Cl. 118—425 **6 Claims**



1. Apparatus for coating successive batches of workpieces with respectively different paints, comprising: a plurality of coating tank units disposed along a conveying path and each arranged to hold a bath of a respective paint, with at least one said unit being composed of a plurality of individual tanks succeeding one another along the conveying path; workpiece conveyor means extending along such path for conveying workpieces therealong; carriage means movable along said conveying path to the region of a selected one of said tank units; and conveyor guide means carried by said carriage means and operatively associated with said conveyor means for causing workpieces being conveyed by said conveyor means to be introduced into each said individual tank of said at least one unit in succession while said carriage means are maintained stationary above said tanks of said at least one unit.

4,262,629

APPARATUS FOR APPLICATION OF SEALANT TO CAN LIDS

Neal J. McConnellogue, Lakewood, and Geoffrey J. Dean, Denver, both of Colo., assignors to Entech Corporation, Englewood, Colo.

Filed Sep. 22, 1977, Ser. No. 835,636
Int. Cl.³ B05C 5/02, 7/02
U.S. Cl. 118—668 **14 Claims**

1. An end liner mechanism adapted to sequentially feed can lids into position for application of a sealant into an outer annular groove of each lid, comprising:

a rotary table including a plurality of circumferentially spaced recesses each sized to receive a can lid in substantially parallel relation to the upper surface of said table, a lift chuck member disposed in a normally lowered position beneath each of said recesses, rotary drive means for synchronously rotating said table and each of said lift chuck members at a predetermined rate of speed whereby said lift chuck members are rotated about their own axes while rotating with said table, a cam member in the path of travel of said lift chuck member for causing each of said

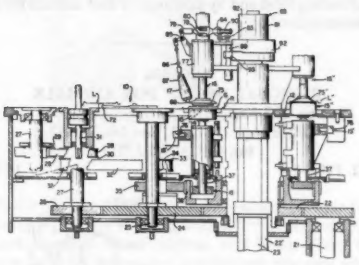
lift chuck members to be advanced between a normally lowered position and a raised position extending upwardly into a respective recess to engage a can lid positioned in that recess and thereafter to return to its normally lowered position;

can lid feed means operative to successively shift a can lid into registry with each recess in succession on said rotary table;

an upper chuck assembly including a spring-loaded pressure pad aligned with each of said recesses and rotatable with said rotary table, each pressure pad disposed to be engageable with a can lid when the can lid is raised by a corresponding lift chuck member, and discharge means on said rotary table in the path of movement of said can lids whereby to advance each can lid away from said rotary table for discharge as each said lift chuck member is movable in a direction returning to its normally lowered position after sealant application and under continued rotation of said table from a respective recess; and

a sealant gun assembly associated with each of said pressure pads including feed control means operative in response to engagement of a can lid with a pressure pad to be raised to shift said feed control means to an open position for application of sealant along the outer peripheral groove of each can lid as it is rotated by said lift chuck.

10. An end liner mechanism adapted to sequentially feed can lids from a stack of lids into position for application of a sealant into an outer annular groove of each lid, comprising:



a rotary table including a plurality of circumferentially spaced can lid-receiving recesses each sized to receive a can lid in substantially aligned parallel relation to the upper surface of said table, a lift chuck member disposed in a normally lowered position beneath each of said recesses, rotary drive means for synchronously rotating said table and each of said lift chuck members at a predetermined rate of speed whereby said lift chuck members are rotated about their own axes while rotating with said table through a plurality of stations including in succession a can lid-receiving station, at least one sealant-applying station, a discharge station, and at least one dwell station, a cam member in the path of travel of said lift chuck members for causing each lift chuck member to be advanced between a normally lowered position at the can lid-receiving station and a raised position extending upwardly into a respective recess to engage a can lid positioned in that recess at each sealant-applying station and thereafter to return to its normally lowered position for movement through the discharge and dwell stations;

an upper chuck assembly including a pressure pad aligned with each of said recesses and rotatable with said rotary table, and sealant-applying means operative to apply sealant along the outer peripheral groove of each can lid as it is rotated by a lift chuck member through said sealant applying station;

can lid feed means operative to shift a lid from said stack of lids into registry with each recess in succession on said rotary table as the recess traverses the can lid-receiving station, said feed means including cut-off blade members disposed on diametrically opposed sides of said stack of can lids, each of said cut-off blades including means in the form of a blade edge movable into and away from engagement with vertically spaced can lids in the stack, drive means for rotating said blade members whereby said blade members are movable into engagement with a can lid in the stack to support the lids above the can lid; a shallow receptacle located beneath said stack of can lids; an arcuate guide slot extending from communication with said shallow receptacle in a substantially horizontal direction away from said stack; and can lid engaging means movable into alignment with said guide slot and operative to engage the lowermost can lid in the stack to advance it along said arcuate guide slot into registry with each recess.

4,262,630

METHOD OF APPLYING LAYERS OF SOURCE SUBSTANCE OVER RECIPIENT AND DEVICE FOR REALIZING SAME

Ellin P. Bochkarev, Khlebozavodskoi proezd, 3, kv. 16; Nikolai G. Voronin, ulitsa Petrozavodskaya, 15, korpus 2, kv. 164; Oleg E. Korobov, Golikovsky pereulok, 13, kv. 6; Vadim N. Maslov, ulitsa A. Tolstogo, 22/2, kv. 101, all of Moscow, and Irina B. Nikitina, Radiotsentr 5, 9, kv. 3, Schelkovo Moskovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 756,609, Jan. 4, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 955,024

Int. Cl.[3] **C23C** *13/08*

U.S. Cl. 118—715 **15 Claims**

1. A device for applying a layer of at least one source substance onto a receipient, utilizing a gaseous carrying agent, comprising:

a vessel adapted to house said recipient and said source and to be filled with a gaseous carrying agent

at least one intermediate body having a operational surface capable of condensing said source substance, said body being spatially separated from said source and from said recipient in said vessel:

at least one heater ensuring a specified temperature difference between said source and said intermediate body and between said intermediate body and said recipient; and

a displacement mechanism ensuring location of said operational surface of said intermediate body near the surface of said source, when the substance of said source is applied onto said intermediate body, and location of said operational surface of said intermediate body near the surface of said recipient, when the substance is transferred from said intermediate body onto said recipient.

4,262,631

THIN FILM DEPOSITION APPARATUS USING AN RF GLOW DISCHARGE

Ronald M. Kubacki, 10296 Alpine, #C, Cupertino, Calif. 95014

Filed Oct. 1, 1979, Ser. No. 80,941

Int. Cl.[3] **C23C** *15/00*

U.S. Cl. 118—723 **20 Claims**

1. A glow discharge plasma deposition apparatus for depositing a film on a substrate, comprising:

a sealed housing adapted to contain a vacuum therewithin;

means for connecting a vacuum pump to said housing through a vacuum port adapted to generally create a vacuum within said housing;

means for receiving a first reactant gas;

atomizer chamber means within said housing and adapted to allow said first reactant gas to flow therethrough;

a first RF electrode located within said atomizer chamber means and electrically isolated from said housing adapted for receiving RF energy from a means for supplying RF energy;

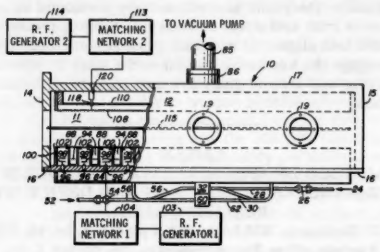
a second RF electrode located within said housing and

electrically isolated from said housing adapted for receiving RF energy from a means for supplying RF energy;

a third RF electrode located within said housing and adapted for connection to a reference potential;

support means to support a substrate within said housing; and

means for receiving a second reactant gas and flowing said second reactant gas into said housing in proximity to said support means;



wherein the application of RF energy to said RF electrodes causes a glow discharge within said atomizer cavity with said first reactant gas flowing therethrough and causes a glow discharge within said housing with said second reactant gas and ionic species from said first reactant gas flowing therethrough so as to deposit a film upon said substrate.

4,262,632

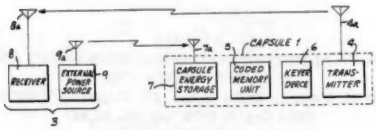
ELECTRONIC LIVESTOCK IDENTIFICATION SYSTEM

John P. Hanton, 1304 S. Willson, and Harley A. Leach, 608 S. Twelfth, both of Bozeman, Mont. 59715

Continuation-in-part of Ser. No. 430,564, Jan. 3, 1974, abandoned, which is a continuation of Ser. No. 304,776, Nov. 8, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 464,118

Int. Cl.[3] A01K *11/00*

U.S. Cl. 119—1 **14 Claims**



1. A device adapted for use in a system for personal animal identification or tagging of ruminants comprising:

(a) capsule means for internally residing permanently in the reticulum of a ruminant to be identified;

(b) coded means in said capsule means for producing a distinctive identification signal peculiar to said animal;

(c) transmitter means in said capsule means for transmitting said distinctive identification signal; and

(d) power means in said capsule means for powering said coded means and said transmitter means; and wherein the specific gravity of said capsule means and its contents is at least about 1.5.

4,262,633

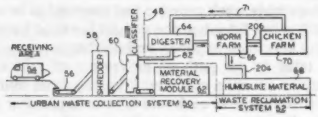
MEANS AND METHODS OF RECLAIMING AND PROCESSING BIODEGRADABLE WASTE INTO POULTRY PRODUCTS AND HUMUS-LIKE SUBSTANCES

Leandro Taboga, 9360 Senate Dr. #2B, Des Plaines, Ill. 60016

Filed May 7, 1979, Ser. No. 36,790

Int. Cl.[3] A01K *67/00*

U.S. Cl. 119—1 **24 Claims**



1. An integrated waste process for the conversion of biodegradable waste into animal products and humus-like substances, said process comprising:

a. partially digesting biodegradable waste over an extended period of time in a controlled environment;

b. spreading a mixture of said partially digested biodegradable waste and earthworms for a period of time which is long enough for said earthworms to grow to optimal size;

c. collecting said spread mixture;

d. separating said earthworms from said humus-like material;

e. feeding said earthworms to animals; and

f. harvesting food and by-products of said animals for human consumption.

4,262,634

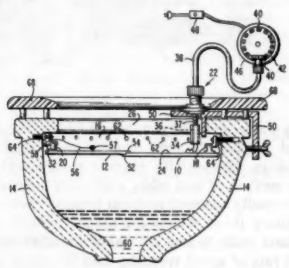
DISPOSAL DEVICE FOR ANIMALS

James Piccone, 803 Kathy Dr., Yardley, Pa. 19064

Filed Sep. 17, 1979, Ser. No. 75,912

Int. Cl.[3] A01K *1/035*

U.S. Cl. 119—1 **16 Claims**



1. A disposal device for animals such as cats, and particularly usable secured to conventional toilet bowls, which comprises:

(a) a first platform means positioned extending approximately horizontally across approximately half the upper opening of a conventional toilet bowl and being pivotally movable with respect thereto;

(b) a first securement means fixedly secured to the conventional toilet bowl and adapted to secure said first platform means thereto;

(c) a second platform means positioned extending approximately horizontally across the other half of the upper opening of a conventional toilet bowl and being pivotally movable with respect thereto, said second platform means adapted to rest upon said first platform means to be maintained in the horizontal orientation;

(d) a second securement means fixedly attached to the conventional toilet bowl and adapted to secure said second platform means thereto;

(e) a control means secured to said first platform means and

adapted to operably control pivotal movement of said first platform means from a first upper position extending approximately horizontal across about half of the upper opening of a conventional toilet bowl to a first lower position extending obliquely downwardly into the conventional toilet bowl, said second platform means being downwardly pivotable from a second upper position to a second lower position responsive to pivotal movement of said first platform means away therefrom upon pivoting to the first lower position; and

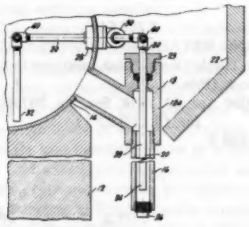
(f) stop means fixedly attached with respect to the conventional toilet bowl to limit the downward pivotal movement of said second platform to a predetermined second downward position.

4,262,635

FREE-EXPANSION BOILER WITH REPLACEABLE HEAT EXCHANGER TUBES

Hector A. Dauvergne, P.O. Box 884, San Leandro, Calif. 94577, and C. William Moore, P.O. Box 756, Pleasanton, Calif. 94566

Filed Jun. 21, 1979, Ser. No. 50,621
Int. Cl.³ F22B *37/10*
U.S. Cl. 122—235 C **12 Claims**



1. A boiler for generating steam comprising a single boiler drum having a cylindrical configuration with a central axis, an upper portion and a lower portion, said boiler drum being mounted in an elevated position in a furnace structure with its axis substantially horizontal and, a plurality of depending boiler tubes connected to the underside of the boiler drum constructed substantially perpendicular to the central axis of the drum and arranged for placement within a furnace, wherein said boiler tubes each have a terminating end below said drum, each boiler tube comprising an outer evaporator tube and an inner water supply tube positioned within each evaporator tube, wherein cooler supply water is circulated from said boiler drum through said inner water supply tubes to said end of said boiler tubes and into said outer evaporator tubes for return of steam and hotter water to said boiler drum.

4,262,636

METHOD OF STARTING A FORCED-FLOW STEAM GENERATOR

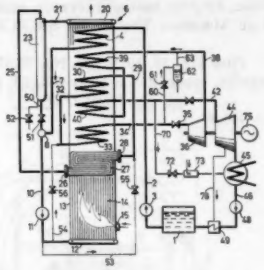
Walter Augsburger, Hettlingen, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 20, 1979, Ser. No. 76,987
Claims priority, application Switzerland, Oct. 3, 1978, 10241/78
Int. Cl.³ F22B *35/44*
U.S. Cl. 122—406 ST **3 Claims**

1. A method of starting a forced-flow steam generator having an economiser heating surface within a flue gas passage; an evaporator heating surface defining a combustion chamber and including a circulating pump for circulating a working medium through said evaporator heating surface; a starting burner in said combustion chamber; at least one superheater within said passage to experience flame radiation; a valve means downstream of said superheater at an outlet of the steam generator; said method comprising the steps of at least partial

filling the economiser and evaporator heating surfaces with a working medium;

thereafter starting the circulating pump, igniting the burner, and injecting a regulated quantity of working medium into the superheater for evaporation therein to build up a



backpressure to inhibit the formation of vapor in the economiser and evaporator heating surfaces;

thereafter opening the valve means to produce a vapor flow for slightly cooling the superheater; and

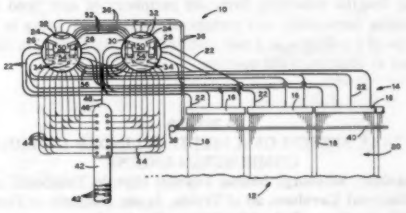
when the vapor pressure in the steam generator coming into the range of a starting pressure for a turbine feeding the economiser heating surface with working medium.

4,262,637

VAPOR GENERATOR

Murray Wiener, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 9, 1979, Ser. No. 65,236
Int. Cl.³ F22G *7/14*
U.S. Cl. 122—478 **4 Claims**



1. In combination with a steam generator including:

a pair of steam-water drums, each drum having an upper steam space and a lower water space,

tubes uniformly interposed between the drums for connecting the steam and water spaces respectively,

downcomer pipes of equal cross-sectional flow area for receiving water from the drums, the downcomer pipes being disposed below and in equispaced relationship with respect to the drums,

supply tubes of equal cross-sectional flow area connecting the downcomer pipes with each drum, the supply tubes for each downcomer pipe being arranged symmetrically with respect to both drums and equally divided between the drums, the total cross-sectional flow area of the supply tubes connected to each downcomer pipe being greater than the cross-sectional flow area of the downcomer pipe,

generating tubes for supplying a steam-water mixture for delivery to the drums,

headers, flow connected to the generating tubes, and riser tubes of equal cross-sectional flow area disposed to receive the steam-water mixture from the headers, the riser

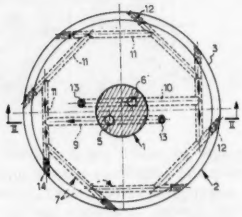
tubes being alternately routed and equally divided between said drums and connected thereto.

4,262,638

MUSHROOM VALVE WITH FORCED FLUID COOLING, IN PARTICULAR FOR AN INTERNAL COMBUSTION ENGINE

Jean P. Coulin, Enghien-les-Bains, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint-Denis, France

Filed Sep. 25, 1979, Ser. No. 78,676
Claims priority, application France, Oct. 25, 1978, 78 30382
Int. Cl.³ F02P *1/08*
U.S. Cl. 123—41.41 **15 Claims**



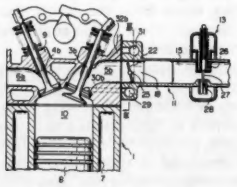
1. A valve, in particular for an internal combustion engine, of the mushroom type cooled by forced circulation of a cooling fluid, comprising a valve stem having at least two longitudinal cooling passage-ways and a valve head being provided with a substantially peripheral cooling passage-way extending in a substantially parallel plane to the lower plane surface of the head and with at least two substantially radial passage-ways connecting the said longitudinal passage-ways to the said peripheral passage-way, wherein said passage-ways provided in the said valve head are constituted by rectilinear passage-way lengths extending from the periphery of said head and opening outwardly, said peripheral passage-way being in the shape of a polygon, and said rectilinear passage-ways are obturated at their outward opening.

4,262,639

INTAKE SYSTEM OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Katsuhiko Motosugi; Shuhei Toyoda; Hiroshi Takahashi, and Kazunori Kawabata, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 23, 1979, Ser. No. 59,496
Claims priority, application Japan, Aug. 10, 1978, 53/97605
Int. Cl.³ F02B *29/02, 31/00*
U.S. Cl. 123—52 M **21 Claims**



1. A multi-cylinder internal combustion engine having a plurality of cylinders, each having a combustion chamber and an intake valve which has a valve head, said engine comprising:

at least one intake passage common to at least two cylinders and comprising a collecting portion having an inlet, and at least two branch intake passages branched off from said collecting portion, each of said branch intake passsages being connected to said respective combustion chamber via said corresponding intake valve;

fuel supply means arranged in the inlet of said collecting portion;

a first common connecting passage;

at least two first branch connecting passages each being connected to said first common connecting passage and having an opening which opens into said respective branch intake passage;

a second common connecting passage;

at least two second branch connecting passages each being connected to said second common connecting passage and having an opening which opens into said respective branch intake passage, and;

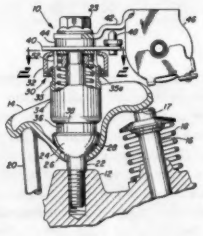
valve means arranged in said branch intake passages at a position upstream of the openings of said first and said second branch connecting passages and opened in accordance with an increase in the level of the load of said engine.

4,262,640

SPRING RETAINER-VALVE SELECTOR

David P. Clark, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 19, 1978, Ser. No. 897,833
Int. Cl.³ F02D *13/06*
U.S. Cl. 123—198 F **5 Claims**



1. A device for selectively enabling and disabling a combustion chamber poppet valve in an internal combusiton engine, said engine having valve gear of the type including a pivotable rocker arm having a first pivot surface thereon operatively connected to said valve for transmitting cyclically applied forces thereto for effecting opening and closing of the valve, said device comprising:

(a) mounting means fixed to said engine;

(b) fulcrum means including means defining a second pivot surface, said fulcrum means slidably received over said mounting means and engageable with said rocker arm at said first pivot surface, said fulcrum means having a first position in which said rocker arm pivots about said second surface, said valve gear being in an enable condition when said fulcrum means is in said first position;

(c) means for selectively locking and releasing said fulcrum means from said first position such that, upon release of said fulcrum means from said first position and upon subsequent application of said cyclically applied forces to said rocker arm, said rocker arm pivots about a second pivot surfaced defined by a contact point between said valve and said rocker arm, said rocker arm upon pivoting about

said second pivot surface being not effective for movement of said valve, said locking and releasing means including,

(i) telescoping capsule means received on said mounting means and in contact with said fulcrum means, said capsule means including an upper cup-shaped spring retainer member in a substantially axially fixed position with respect to said mounting means, a lower spring receiving means including cup-shaped spring receiving member partially received within and adapted for lost motion with respect to said spring retainer member, spring means received between said spring receiving member and said spring retainer member, said spring means biasing said receiving and retaining members away from each other, radially compressible means received in said spring retainer and exerting a radially outward bias, means associated with said spring receiving means and defining a radially inner abutment surface, said radially compressible means radially overlapping said radially inner abutment surface for limiting the longitudinal movement of said spring retaining member with respect to said spring receiving member, as urged apart by said spring means, said inner abutment surface and said radially compressible means otherwise permitting lost motion of said spring receiving member toward said spring retaining member,

(ii) blocking means receiving on said mounting means and contacting said capsule means, said blocking means being movable between a first position in which motion of said spring receiving member relative to said spring retaining member is prevented and said rocker is thereby maintained in said first position, and a second position for said blocking means in which relative motion of said spring receiving member with respect to said spring retaining member is permitted during which said spring capsule means absorbs through lost motion the cyclically applied forces of said valve gear train for disabling said valve, and

(iii) actuating means connected to said blocking means and operative for selectively moving said blocking means between said first and second positions, wherein upon movement of said blocking means to said first position during relaxation of said cyclic forces said fulcrum means is thereafter maintained in said first position for enabling said valve, and wherein upon subsequent movement of said blocking means to said second position during relaxation of said cyclic forces said rocker arm pivots about said second surface for disabling said valve movement.

4,262,641

COMBINED RPM LIMITER, AND ELECTRONIC TACHOMETER WITH SHIFT POINT INDICATOR

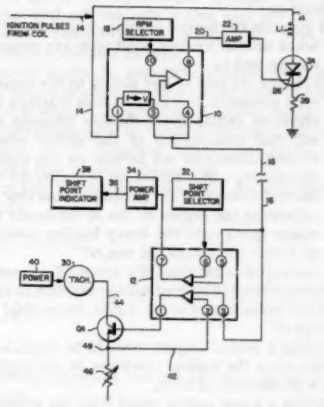
Gordon P. Mosely, and Michael D. Dillahunty, both of Carson City, Nev., assignors to W. R. Grace & Co., New York, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,649

Int. Cl.³ F02D *31/00;* **G01P** *3/58*

U.S. Cl. 123—335 **32 Claims**

1. A method of controlling the RPM of an engine using proportional shunting to ground of ignition pulses, comprising the steps of converting the stream of ignition pulses to a first analog signal whose value is in a predetermined relationship to the frequency of said stream of ignition pulses and to the RPM of said engine continuously and directly supplying said first signal as one of the inputs to an operational amplifier, generating a second analog signal whose value is related to a manually variably selected maximum engine RPM in accordance with said predetermined relationship used to generate said first signal, continuously and directly supplying said second signal as the second input to said operational amplifier, and supplying



chatter and positive value outputs from said operational amplifier to means to proportionally ground said ignition pulses.

4,262,642

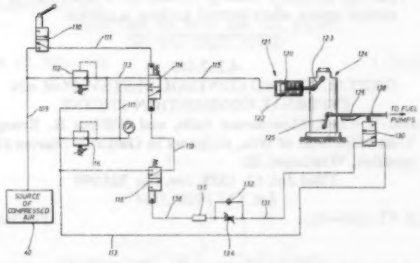
DEVICE FOR REDUCING FUEL CONSUMPTION IN INTERNAL COMBUSTION ENGINES

Anatoly Sverdlin, 2018 Willow Wisp, Seabrook, Tex. 77586

Continuation-in-part of Ser. No. 852,091, Nov. 16, 1977, abandoned. This application Feb. 27, 1979, Ser. No. 15,592

Int. Cl.³ F02B *1/04*

U.S. Cl. 123—378 **15 Claims**



1. In an automatic control system for regulating the speed of an internal combustion engine, the system having,

(a) an engine speed selector, for selecting a normal loading condition speed for the engine,

(b) a governor, for sensing the engine speed relative to the selected speed, and

(c) a fuel supply means responsive to the governor for supplying fuel to the engine, the improvement comprising:

(1) an engine load sensing means connected to said fuel supply means and responsive to the rate of fuel supply, for sensing when the engine is under heavy loading conditions, said load sensing means generating a start scan signal when heavy loading conditions are present on the engine;

(2) a time interval generator responsive to the start scan signal, for generating a predetermined scan interval time during which the normal loading condition speed in reduced to a lower regulated engine speed, the scan interval time having a time interval sufficient to permit the engine speed to attain the lower regulated entine speed; and

(3) an engine speed control means responsive to said engine speed selector and said time interval generator, for generating a fuel control signal to said fuel supply means to

(i) maintain the normal loading condition engine speed when normal loading conditions are present on the engine, and to

(ii) reduce the rate of fuel supply to the engine during each generated scan interval time to obtain the lower regulated engine speed thereby reducing the stress and fuel consumption of the engine when heavy loading conditions are present on the engine while maintaining a desirable speed of travel, the total time interval from all of the generated scan time intervals permitting the engine to run at the lower regulated engine speed until the heavy loading conditions are no longer present on the engine.

14. A method of controlling the speed of a marine diesel engine during periods of heavy loading condition to reduce the stress and fuel consumption to the engine, the method comprising the steps of:

(a) selecting a normal engine speed to be regulated during periods when the loading condition on the engine is less than a predetermined level;

(b) selecting a lower engine speed from the normal engine speed to be regulated during periods when the loading condition on the engine is greater than the predetermined level;

(c) sensing the loading condition on the engine;

(d) regulating the engine speed to the normal engine speed if the loading condition is less than the predetermined level;

(e) generating a predetermined scan interval time when the loading condition on the engine is greater than the predetermined level and having a duration until which the engine speed is regulated to the lower engine speed; and

(f) repeating steps (c)–(f) at the completion of each scan interval time to enable the engine to run at a lower regulated engine speed than the normal speed throughout periods of heavy loading conditions, and to run at the normal speed when normal loading is present.

4,262,643

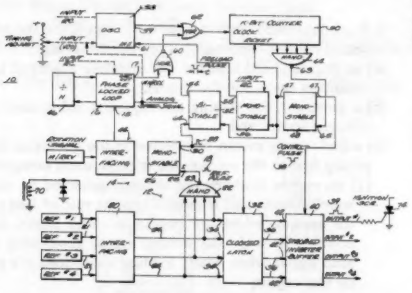
DIGITAL TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

David T. Cavil, Menomonee Falls, and William R. Krueger, West Allis, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 12, 1978, Ser. No. 923,999

Int. Cl.³ F02P 5/04

U.S. Cl. 123—416 **17 Claims**



1. A digital timing control system for an internal combustion engine comprising processing circuit means for receiving a cyclical engine timing reference pulse and for producing a cyclical control pulse offset from said reference pulse, said processing circuit means including means including a counter for producing said control pulse when said counter reaches a preset count, means, subject to said control pulse, for resetting said counter and for providing preload pulses to said counter for a predetermined period of time to establish a preload count, and means, subject to said reference pulse, for transmitting a fixed number of signal pulses per engine revolution to said counter to increment said preload count until said preset count is reached, said means comprising a phase-locked loop having a loop output which provides said signal pulses, said phase-locked loop including an input for receiving "M" pulses per engine revolution, and wherein said means for transmitting a fixed number of signal pulses further includes frequency divider means connected to said phase-locked loop so that the loop oscillator frequency is "N" times the input frequency "M" so that said loop output provides "MN" signal pulses per engine revolution, whereby said control pulse is produced, and distributor means for receiving said reference pulse and, subject to said control pulse, for converting said reference pulse into an output pulse for controlling an engine operating event.

4,262,644

SPARK TIMING CONTROL CIRCUIT FOR CONTROLLING THE TIMING OF SPARK IGNITION OF AN INTERNAL COMBUSTION ENGINE

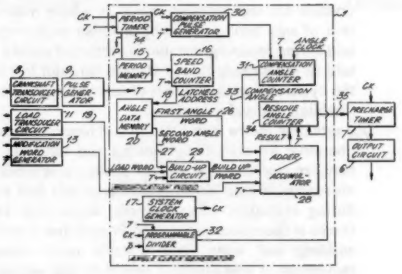
David M. Walker, Freuchie, and Alastair K. Stevenson, Glenrothes, both of Scotland, assignors to Hughes Microelectronics, Ltd., Fife, Scotland

Filed Aug. 3, 1979, Ser. No. 63,656

Claims priority, application United Kingdom, Oct. 27, 1978, 42237/78; Jan. 3, 1979, 138/79

Int. Cl.³ F02P 5/06

U.S. Cl. 123—418 **11 Claims**



1. A spark timing control circuit for controlling the timing of spark ignition of an internal combustion engine in response to electrical signals indicative of engine speed and engine load, comprising

(a) a speed band selector circuit responsive to a signal indicative of engine speed and adapted to provide an output signal indicative of which of a plurality of predetermined speed bands is occupied by the value of engine speed indicated by said speed signal,

(b) memory means programmed with information about the desired occurrence of the ignition spark for the speed bands respectively, the information for each speed band consisting of a first stored signal indicative of the desired occurrence of a spark measured in units of angular rotation of the engine from a predetermined rotational position thereof and for a predetermined engine load, and a second stored signal in said angle units and indicative of an incremental angular change to be made to the angle defined by the first stored signal for an incremental change in engine load, said memory means being responsive to the output signal from the speed band selector circuit so as to provide addressed ones of said first and second stored signals for the speed band indicated by the output signal,

(c) build-up means responsive to a signal indicative of engine

load and adapted to add the addressed second stored signal to the addressed first stored signal a number of times determined by the number of said increments of engine load by which the value of engine load indicated by said load signal differs from said predetermined load, whereby to produce an accumulated signal indicative of the desired angle of occurrence of the spark as a function of engine speed and load, and

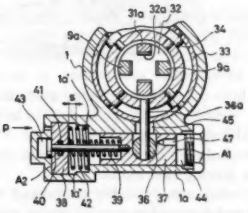
(d) means for converting the angle represented by the accumulated signal into a time delay signal for controlling generation of a spark, said delay signal being indicative of a delay relative to a predetermined time in the engine operating cycle and which is a function of the time taken for the engine to rotate at the engine speed indicated by said engine speed signal through the angle represented by said accumulated signal.

4,262,645

INJECTION TIMING CONTROL DEVICE FOR DISTRIBUTOR-TYPE FUEL INJECTION PUMP

Masayoshi Kobayashi; Toru Sakuranaka, and Kelichi Yamada, all of Higashi-matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,491
Claims priority, application Japan, Jun. 16, 1978, 53-073538
Int. Cl.³ F02M *59/20, 59/32*
U.S. Cl. 123—502 **5 Claims**



1. In a fuel injection pump for internal combustion engines of the type including a pump plunger, a rotary element coupled to said plunger for rotation at speeds dependent on engine speed, a semi-fixed element having an end face disposed in camming engagement with said rotary element and allowed to make a pivotal movement through a limited angle, the rotary element being adapted to carry out simultaneous rotating and reciprocating motion to cause a corresponding simultaneous rotating and reciprocating motion of the pump plunger for suction and pressure delivery of fuel, a first hydraulic actuatable element having a predetermined pressure applying area and connected to said semi-fixed element, a second hydraulic actuatable element having a larger pressure applying area than said first hydraulic actuatable element and disposed on an extension of the axis of said first hydraulic actuatable element, means for prohibiting displacement of said second hydraulic actuatable element toward said first hydraulic actuatable element beyond a prescribed range, a first spring interposed between said two hydraulic actuatable elements and urging them in a direction opposite to each other, and a pressure source for supplying a hydraulic pressure which is a function of engine speed to said first and second hydraulic actuatable elements at pressure applying areas thereof, wherein said pressure applying areas of said first and second hydraulic actuatable elements are each arranged on end faces of the respective hydraulic actuatable elements remote from said first spring, and whereby displacement of said first hydraulic actuatable element toward said second hydraulic actuatable element causes an advance in the injection timing of the pump,

the improvement comprising:

coupling means coupled to said first and second hydraulic actuatable element for permitting relative movement of said first and second hydraulic actuatable elements within a prescribed distance and for causing common movement of said first and second hydraulic actuatable elements when said prescribed distance is exceeded; and

a second spring having one end arranged stationary and another end permanently urging said second hydraulic actuatable element in a direction away from said first hydraulic actuatable element;

said second hydraulic actuatable element being kept in a most biased position by said spring until said hydraulic pressure which is a function of engine speed reaches a predetermined value to bias said first hydraulic actuatable element in an injection timing advancing direction through said coupling means; and

wherein the following relationships are satisfied simultaneously:

$$P(A_2-A_1)>KS$$

and

$$PA_1 \geqq F$$

where

A_1=pressure applying area of said first hydraulic actuatable element,

A_2=pressure applying area of said second hydraulic actuatable element,

P=pressure acting upon the pressure applying areas of said first and second hydraulic actuatable elements,

S=maximum allowable displacement of said second hydraulic actuatable element,

F=setting load of said first spring, and

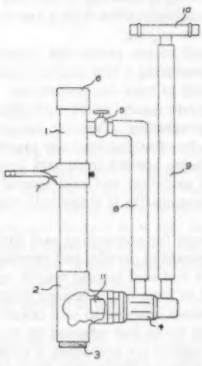
K=spring constant of said second spring.

4,262,646

CONTROLLED AIR SUPPLY FOR INTERNAL COMBUSTION ENGINES

Jeffery C. Jones, Dunlap, Tenn., assignor to NBJ Corporation, Lexington, Ky.

Filed Mar. 23, 1979, Ser. No. 23,297
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **3 Claims**



1. In an internal combustion engine a device for controlling a flow of heated air to the vacuum inlet of the carburetor of said engine, said device comprising:

(1) an elongated duct means having an inlet and an outlet through which said heated air flows,

(2) a chamber means having an outlet opening connected to said inlet of said duct means, an inlet opening for receiving said air heated by said internal combustion engine, and an opening intermediate said outlet and inlet openings,

(3) temperature responsive valve means having an inlet opening and an outlet opening, said valve means having a

temperature sensor means operably positioned in said intermediate opening of said chamber to sense the temperature of said air heated by said engine to control thereby the flow of air through said valve from said inlet opening thereof to said outlet opening thereof,

(4) manually controlled valve means interconnected between said outlet of said air intake duct and said inlet opening of said temperature responsive valve means to control the overall quantity of air flowing into said inlet opening of said temperature responsive valve, and

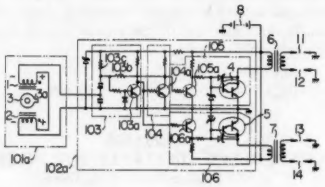
(5) means connecting said outlet of said temperature responsive valve means to said vacuum inlet of said carburetor whereby as said engine heats up, said temperature responsive valve means opens to permit warmed air to be drawn through said device into said vacuum inlet of said carburetor.

4,262,647

CONTACTLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Shinro Torii, Chiryu; Toshio Tanaka, Anjo; Kouichi Sasaki, Kariya; Tsuneo Kato, Kariya, and Shigeya Abe, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 24, 1979, Ser. No. 33,151
Claims priority, application Japan, Jun. 23, 1978, 53/76777
Int. Cl.³ F02P *1/00, 5/04*
U.S. Cl. 123—651 **10 Claims**



1. A contactless ignition system for an internal combustion engine comprising:

rotor means having at least one projection and adapted to be rotated in synchronization with a crankshaft of said internal combustion engine;

first pickup coil means positioned adjacent to said rotor means for generating a first output signal at every passing thereby of said at least one projection;

second pickup coil means positioned adjacent to said rotor means for generating a second output signal at every passing thereby of said at least one projection, said second coil means being spaced from said first coil means such that each of said first and said second output signals is generated substantially at every half rotation of said rotor means;

connecting means for connecting said first and said second pickup coil means in parallel and opposite in polarity such that said first and said second output signals are cumulatively added to form a synthesized output signal;

input circuit means coupled to said connecting means via a single pair of wires and adapted to receive said synthesized output signal for providing a generally rectangular shaped signal the leading and trailing edges of which are triggered by the comparison of said synthesized signal with preset threshold levels;

inverter circuit means connected to said input circuit means for inverting said rectangular signal in polarity to form an inverted rectangular signal;

first and second ignition coils each having a primary and a secondary coil, each of said secondary coils adapted to be connected to at least one spark plug provided on said internal combustion engine;

first output circuit means, coupled to said inverter circuit means for energizing and deenergizing said primary coil of said first ignition coil in response to said inverted rectangular signal; and

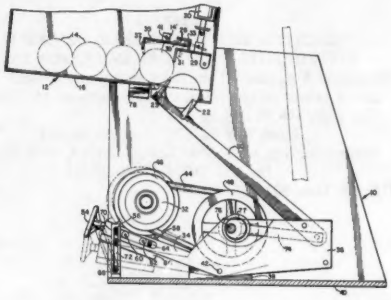
second output circuit means, coupled to said input circuit means, for energizing and deenergizing said primary coil of said second ignition coil in response to said rectangular signal.

4,262,648

SOFTBALL PITCHING MACHINE

John A. Wegener, Gloucester City, and Joseph F. Garvey, Haddon Heights, both of N.J., assignors to Slo-Pitcher, Inc., Camden, N.J.

Filed Dec. 11, 1978, Ser. No. 968,343
Int. Cl.³ F41B *3/04*
U.S. Cl. 124—6 **10 Claims**



1. In a machine for pitching one or more balls at selected intervals at a predetermined speed and at a predetermined angle, the combination comprising:

a. a motor including a flywheel connected thereto,

b. means for driving said motor,

c. a ball throwing arm rotatably connected to an eccentric cam shaft and disposed to receive one or more balls one at a time,

d. drive means connected to said eccentric cam shaft to move said ball throwing arm at a relatively high speed to throw a ball disposed thereon and return said arm to its original position after only one revolution,

e. condition responsive means to detect when a ball is to be pitched, and

f. a clutch mechanism including a movable element normally retracted from said flywheel and responsive to said condition responsive means to directly connect said flywheel to said drive means to cause a ball disposed on said arm to be thrown and to disconnect said flywheel from said clutch mechanism after a ball has been thrown.

4,262,649

SINE BI-ANGLE WHEEL DRESSER

Fidel Espinosa, 1155 W. 77 St., Apt. 125D, Hialeah, Fla. 33014

Filed Dec. 17, 1979, Ser. No. 103,974
Int. Cl.³ B24B *53/02*
U.S. Cl. 125—11 B **3 Claims**

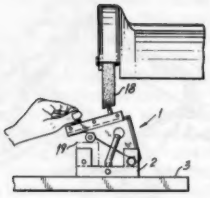
1. A sine bi-angle wheel dresser capable of accurately providing the wheels of surface grinders with an angle on each side without disturbing its initial set-up, comprising:

(a) a base of substantially rectangular shape having a vertical support member on each corner and each support member having a pivot hole therethrough, said pivot holes being aligned and arranged in pairs on each end of said base,

(b) a carrier holder having the shape of an isosceles triangle including two bushings on the longer side of said holder, said bushings being separated and each in alignment with a pair of said pivot holes when said carrier is sandwiched between said vertical support members, said carrier

holder including symmetrical guide means on each of the shorter side thereof, said guides being aligned with each other,

(c) a pin extending through one of said pair of pivot holes and a brushing and having a diameter that makes it fit snugly,



(d) a carrier of elongated rectangular shape removably and slidably engaging said guide or means on either one of the symmetrical sides in said triangular holder and further including a cutting diamond attached to a diamond holder which in turn is attached to one end of said carrier and the other end having a handle integrally built in said carrier, and

(e) means for urging said carrier towards said base

4,262,650

EXPENSIVE ABRASIVE BASE CUTTING WHEELS WITH A METALLIC CORE NOTCHED AT THE PERIPHERY

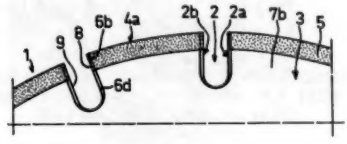
Henri Ferrand, Chartres, and Alain Echard, Luce, both of France, assignors to Applications Industrielles du Diamant S.T.I. Triffus France, Chartres, France

Filed May 2, 1979, Ser. No. 35,410

Claims priority, application France, Mar. 5, 1978, 78 13241

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—15 **7 Claims**



1. In a rotatable cut-off wheel with a thin disc metal core notched at its periphery to provide open notches and having expensive abrasive base cutting elements formed on the peripheral edges of said core between the open notches, the improvement comprising, means for substantially reducing hissing and whistling noises during high speed rotation of the wheel, said means comprising each of the side edges of the forwardly facing advancing surfaces of each of the notches and the corresponding operative edges of the cutting elements of a profile non-parallel with the axis of rotation of the wheel.

4,262,651

FIREPLACE LOG GUARD

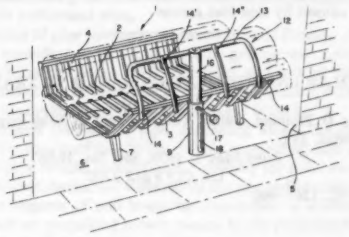
Jr. Fajt, 2149 Iris Rd., Pueblo, Colo. 81006

Filed Nov. 23, 1979, Ser. No. 96,613

Int. Cl.³ F24C *15/36*

U.S. Cl. 126—202 **4 Claims**

1. In a fireplace grate having a bottom wall for supporting logs and upturned front and rear walls, a log guard comprising a vertically disposed elongated sleeve member fixedly attached to said front wall generally in the center of and depending therefrom, said sleeve member engaging a supporting surface for stabilizing said grate and preventing forward toppling thereof, a horizontally disposed guard frame bar formed with downwardly depending spaced leg means, said bar having a generally centrally disposed vertical bolt means spaced from said leg means, said bolt means being sleeved and vertically movable in said sleeve member, locking means formed on said



sleeve member for latching said bolt means therein, said bolt means and bar being elevatable above said front grate wall whereby said spaced legs act as a barrier to logs on said grate, and when lowered below the top of said front wall said grate is accessible for cleaning and loading.

4,262,652

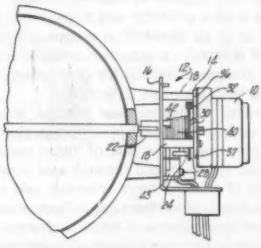
VENT DAMPER DRIVE

Thomas J. Butzen, Greenfield, Wis., assignor to Paragon Resources, Inc., Warren, Mich.

Filed Nov. 13, 1979, Ser. No. 93,479

Int. Cl.³ F23L *3/00*

U.S. Cl. 126—285 B **9 Claims**



1. An automatic control device for an exhaust stack damper device of the type adapted to be mounted in the exhaust stack of a combustion heating device and including a damper movably mounted in said exhaust stack between an open and a closed position and adapted to allow the substantially unrestricted passage of combustion gases from said combustion heating device when said damper is in said open position and adapted to substantially close said exhaust stack to the passage of said combustion gasses, when in said closed position said automatic control device comprising:

bias means urging motion of said damper towards said open position;

motive means operative when activated to overcome said bias means and move said damper to said closed position;

a shaft attached to said damper, axial rotation of said shaft serving to move said damper between said open and said closed position;

connector means operatively connecting said bias means with said shaft so that said bias means urges said shaft to rotate to a position corresponding to said open position of said damper; and

second connector means operatively connecting said motive means with said shaft so that when activated said motive means serves to rotate said shaft against said bias means to a position corresponding to said open position of said

damper, said second connector means providing a limited degree of motion for said motive means independent of the rotation of said shaft;

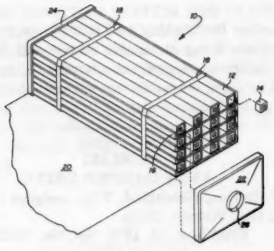
whereby said motive means may continue in motion under the force of inertia after said shaft and said damper have reached the end of their travel towards said open position caused by said bias means.

4,262,653

SOLAR ENERGY HEAT STORAGE AND TRANSFER SYSTEM

Larry D. Holland, Dallas, Tex., assignor to Neha International, Dallas, Tex.

Filed May 1, 1979, Ser. No. 34,987
Int. Cl.³ F24J 3/02
U.S. Cl. 126—400 **7 Claims**



1. A solar energy storage module for use in a solar energy heat storage and transfer system for storing thermal energy gathered by a solar collector and transferring the stored thermal energy to an air distribution system comprising:

a sheet of thermally conductive material forming as open-ended, elongated conduit for connection in fluid communication with the solar collector;

a plurality of elongated heat storage elements received within said conduit, each heat storage element including a sealed tube containing heat of fusion material for storing heat from air circulated through said conduit;

a plurality of stacked trays retaining said tubes in spaced relation to allow air from the collector to flow along the length of said tubes and trays, each tray having a thermally conductive side portion disposed in surface engagement with one or more of said tubes to promote the transfer of heat from said tubes to siad trays and to said conduit; and,

end coverings fitted over the open ends of said conduit, said end covers having inlet and outlet openings, respectively, for admitting and discharging air circulated from the solar collector through said conduit along the length of said tubes.

4,262,654

SOLAR-ENERGY-POWERED SUN TRACKER

Carter J. Ward, 604 Sunfish Way, Port Hueneme, Calif. 93041

Filed Aug. 24, 1979, Ser. No. 69,665
Int. Cl.³ F24J 3/02
U.S. Cl. 126—425 **17 Claims**

1. A solar-powered sun-tracking apparatus comprising:

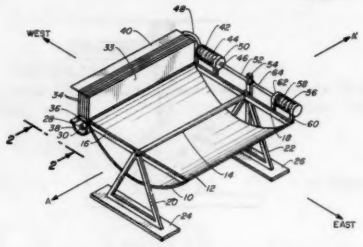
fluidic sensing means responsive to rays of radiant energy for producing a fluidic pressure;

means for translating said fluidic pressure into a mechanical force;

means for focusing rays of radiant energy on said fluidic sensing means when said rays have a predetermined range of angles of incidence relative to said focusing means; said means for focusing rays of radiant energy including:

filter means having a plurality of parallel plates arranged to allow passage of said rays only for angles of incidence within a predetermined range of angles; and

focusing means for focusing the rays passing through said filter means onto said fluidic sensing means;



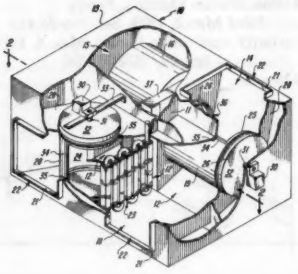
means responsive to said mechanical force for positioning said sun-tracking apparatus so that said means for focusing is maintained at a predetermined position relative to the angle of incidence of said rays.

4,262,655

CYLINDRICAL ROTARY CONTROLLER FOR A SOLAR HEAT SYSTEM

Larry L. Jackson, Rte. 3, Sterling, Colo. 80751

Filed Aug. 23, 1979, Ser. No. 69,244
Int. Cl.³ F24J 3/02
U.S. Cl. 126—429 **1 Claim**



1. A control device for a solar heating system having a heat collector and a storage unit, the solar heating system being operative on a building structure, said control device comprising in combination:

a. a control module generally divided by partitions into four chambers including:

a collector chamber having a port establishing air flow communication between the collector chamber and said collector;

a building chamber having a port establishing communication between the building chamber and said building;

a blower chamber having two separate passageways, one establishing communication between the blower chamber and the collector chamber and the other establishing communication between the blower chamber and the building chamber;

a storage chamber having a port establishing communication between the storage chamber and said storage unit, said storage chamber also having two separate passageways, one passageway establishing communication between the storage chamber and the collector chamber and the other establishing communication between the storage chamber and the building chamber;

b. a blower mounted within said blower chamber;

c. a generally cylindrical hollow collector air flow controller in said collector chamber having a cylindrical wall, an end cap and an open base port, said base port being in communication with said passageway between the collector chamber and the blower chamber, a portion of the cylindrical wall being removed to form an open side and a deflector side, means for pivotally mounting said collector controller for pivotal movement about its longitudinal axis, said collector controller being movable between a first position wherein said deflector side blocks air flow communication between the collector chamber and the collector and the open side allows air flow from said storage unit via said storage chamber and the open side and the open base into said blower chamber, and a second position wherein said deflector side blocks air flow communication between said collector chamber and said storage chamber and allows air flow from said collector through said collector chamber into said blower chamber;

d. a generally cylindrical blower air flow controller in said blower chamber having a cylindrical wall having an end cap on either end, a portion of the cylindrical wall being removed to form an open side and a deflector side, means for pivotally mounting said blower controller for pivotal movement about its longitudinal axis, said blower air flow controller being movable between a first position wherein said deflector side blocks air flow communication between said building chamber and said building and the open side allows air flow from said collector via said collector chamber into said blower chamber and said storage chamber into said storage unit, and a second position wherein said deflector side blocks air flow communication between said building chamber and said storage chamber and allows air flow from said collector through said collector chamber and said blower chamber into said building; and

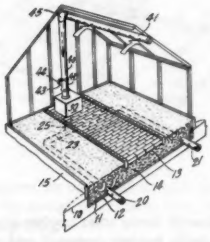
e. means for alternatively positioning said collector and blower air flow controllers to form a first flow path from the collector to the building, a second flow path from the collector to the storage unit and a third flow path from the storage unit to the building.

4,262,656

SOLAR CLIMATE CONTROL FOR GREENHOUSES

Chris Esposito, 2059 E. 37th St., Brooklyn, N.Y. 11234

Filed Feb. 28, 1979, Ser. No. 16,153
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **4 Claims**



1. A solar heating means for a greenhouse structure of the type having air vents and louvers comprising,

an excavated area 12 to 24 inches deep, lined with insulating material and surrounded by a foundation for the greenhouse,

at least one perforated pipe positioned on said insulating layer extending along an interior portion of said excavated area,

a layer of stable inorganic heat storage particles of a size of at least ¾", covering said insulation and said pipe to a thickness of 18–24 inches,

an air control chamber connected to said perforated pipe, said air control chamber, above said layer of heat storage particles, containing air propelling means, having inlet and outlet sides and humidifier means,

means connecting the outlet side of said air propelling means to said perforated pipe,

a T-section of pipe having one branch thereof forming an air vent extending to the outside of the greenhouse, a second branch connected to a vertical pipe, and a third branch connected to the inlet side of said air propelling means,

means for optionally closing the air vent branch,

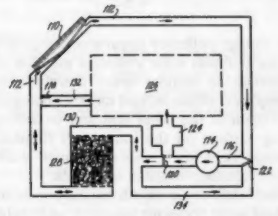
an overhead perforated pipe extending along the upper interior region of said house, means connecting said overhead pipe to said vertical pipe, whereby for cold weather conditions, heated air warmed by the sun and reaching the upper regions of said house by convection is withdrawn by said air propelling means, passed to the perforated pipe below the heat storage particles, to pass upwardly and heat the heat storage particles.

4,262,657

SOLAR AIR HEATER

Robert W. McCullough, Tarrytown, and Thomas A. Hewett, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 712,139, Aug. 6, 1976, abandoned. This application Aug. 12, 1977, Ser. No. 824,100
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—436 **34 Claims**



31. In a solar heating system including a solar air heater, means for passing a gas to be heated through said solar air heater and for directing the heated gas to a space to be heated, a storage device for storing heat over a prolonged period of time, means for periodically diverting said heated gas away from said space and into said storage device when said space has reached a predetermined temperature and means for periodically directing the gas to be heated through said storage device for heating said gas and then directing said heated gas into said space; the improvement wherein said solar air heater comprises, in combination:

a housing having a light-transmitting front wall for passing incident solar radiation and including an inlet and an outlet for establishing a flow path for a gaseous medium to be heated;

a gas-permeable radiation absorbent collector element positioned accross the flow path in said housing and arranged to accept incident solar radiation passing through said front wall and to transfer the absorbed heat to said gaseous medium passing along said flow path and through said collector element; and

a radiation trap disposed in said housing adjacent to the surface of said front wall facing said collector element, said radiation trap comprising a cellular structure containing a multiplicity of open cells in communication with said flow path and having cell walls which are substantially perpendicular to said front wall and which serve as baffle elements to inhibit the flow of said gaseous medium through said radiation trap in a direction substantially parallel to the plane of said front wall, said cellular struc-

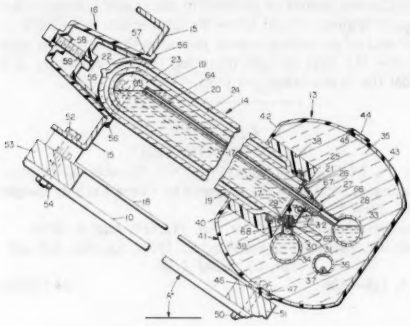
ture being maintained in at least firm mechanical contact with said front wall and being composed of a light-transmitting material which is opaque to infrared radiation emitted from said collector element in a direction toward said front wall.

4,262,658

DRAINABLE SOLAR COLLECTOR APPARATUS

Joseph R. Frissora, Corning, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 26, 1978, Ser. No. 918,995
Int. Cl.³ F24J 3/02
U.S. Cl. 126—443 **30 Claims**



1. A solar energy collector apparatus comprising

a double-wall tubular solar collector member wherein said walls include an annular space therebetween sealed at subatmospheric pressure, said member being closed at one end and open at the other end and including an energy absorbing surface on the inner wall thereof, said outer wall being transparent and said inner wall defining a chamber extending between said ends,

a cup element defining a mouth opening receiving the open end of said solar collector member, and including means providing a annular liquid seal between said cup and tubular solar collector member,

an elongated hollow vent tube extending into said cup element and said chamber, said tube having an axial passageway that is open at its one end within said chamber,

a fluid connection means connected into said cup element remote from said vent tube, said means including a fluid flow restriction means for fluid flow into said chamber at a rate substantially less than the fluid flow rate permitted by said vent tube passageway out of said chamber,

fluid conduit means connected to said fluid connection means outside said cup element for supplying fluid therethrough, and

separate fluid conduit means connected to said vent tube outside said cup element.

4,262,659

SOLAR RADIATION ABSORBING PANEL

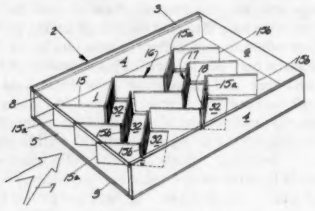
Joseph Brzezinski, Franklin, Ohio, assignor to Valley Industries, Inc., Cincinnati, Ohio

Filed Jan. 24, 1980, Ser. No. 114,966
Int. Cl.³ F24J 3/02
U.S. Cl. 126—449 **34 Claims**

1. A solar radiation absorbing panel for use with a fluid heating solar collector of the type having a box-like enclosure dimensioned to accept said panel and including a cover overlying said panel transmissive to solar radiation, said panel comprising:

a substantially flat plate-like base sheet of solar radiation absorptive material having a substantially planar surface bounded by spaced side and end edges, said end edges forming the fluid inlet and outlet, respectively, of said panel; and

means projecting away from said surface of said base sheet for forming at least one fluid passageway for directing fluid from said inlet to said outlet, said means including a plurality of individual tab members extending away from said surface of said base sheet, each of said tab members being formed by severing said sheet along a continuous line leaving a portion of said base sheet attached between the ends of said severed line and bending said tab member



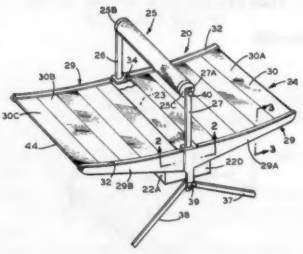
along said attached portion away from said surface leaving an opening in said base sheet, the spaces between some at least of said tab members forming said fluid passageways, each of said tab members including spaced edges extending away from said base sheet, said plurality of tab members comprising a first series of tab members arranged in end-to-end relationship extending generally between said inlet and outlet, and a second series of tab members arranged in end-to-end relationship spaced from said first series of tab members to form said passageway between said first and second series of tab members.

4,262,660

SOLAR COOKER

Daniel F. Ilich, 149-44 Cherry Ave., Flushing, N.Y. 11255

Filed Aug. 2, 1979, Ser. No. 63,060
Int. Cl.³ F24J 3/02
U.S. Cl. 126—451 **5 Claims**



1. A portable knock down solar cooker comprising

a box shaped body having opposed end portions, a connected bottom, and a cover adapted to define a housing for storing the component parts in the knock-down position and a support for said solar cooker in the assembled position,

a pair of complementary arm segments disposed adjacent to each opposed end portion of said housing,

said arm segments extending laterally from said body,

a reflector removeable supported between said arm segments,

a pair of uprights stanchions detachably securing said arm segments to said body in the assembled position,

and a solar oven detachably interposed between the upper

ends of said stanchions in spaced relationship to said reflector,

said pair of complementary arm segments each includes complementary inner end portions, each inner end portions terminating in an upper and lower inturned tab portion, each of said upper and lower tab portions having an aligned opening therein, said inner end portion of said complementary pair of arm segments being disposed in overlapping relationship in the assembled position so that the openings in said upper and lower tab portions are disposed in alignment, said box shaped body having vertically spaced slotted openings in the ends thereof adapted to receive said tab portions in the assembled relationship, and said stanchion being extended through said slotted openings and aligned openings in said tab portion for detachably securing said complementary arm segments to said box body.

4,262,661

SOLAR ENERGY ABSORPTION MATERIAL OR COATING COMPRISING AN ARYLENE SULFIDE POLYMER

Donald G. Needham, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 27, 1976, Ser. No. 754,761

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—452 **5 Claims**

3. A method for the improved capture and/or absorption of sun's rays, to create heat and ultimately to utilize the same, which comprises coating a material or substance adapted to capture and/or to conduct heat derived from solar energy with an arylene sulfide polymer, exposing said coating to the sun's rays, thereby absorbing energy as heat, and transmitting said heat from said coating to a place of utilization.

4,262,662

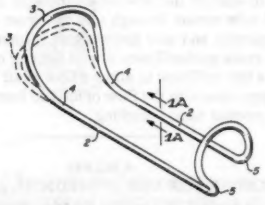
PENILE SUPPORT

Francis W. Allinson, 53 W. Lewis Ave., Phoenix, Ariz. 85003

Continuation-in-part of Ser. No. 12,836, Jan. 16, 1979, which is a continuation-in-part of Ser. No. 970,490, Dec. 18, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,958

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—79 **1 Claim**



1. A penile support for engagement with the male organ and for assisting in the sexual function in case of male weakness, said support comprising:

a. a pair of malleable spaced apart elongated longitudinal supports for supporting and extending the ventral surface of the penis, each said support having a distal end and a proximal end;

b. a malleable, generally loop-shaped, proximal portion integrally joining the proximal ends of said pair of supports and extending upwards therefrom over said male organ,

said proximal portion being deformable relative said longitudinal support for selectively varying the angular relationship between said proximal portion and said pair of supports,

the said proximal portion being further deformable to enable adjustment of adjacent longitudinal support transversely; and

c. a malleable head piece extending between the distal ends of said pair of supports and having a curve therein for extending upwards over coronal sulcus of said male organ,

said head piece being more malleable than said longitudinal supports.

4,262,663

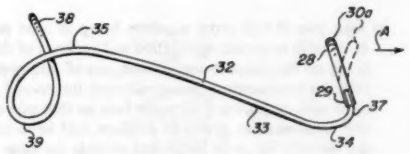
PENILE SUPPORT

Francis W. Allinson, 53 W. Lewis, Phoenix, Ariz. 85003

Continuation-in-part of Ser. No. 82,958, Oct. 9, 1978, which is a continuation-in-part of Ser. No. 12,836, Jan. 16, 1979, which is a continuation-in-part of Ser. No. 970,490, Dec. 18, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 110,085

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—79 **9 Claims**



1. A penile support for engagement with the penis and for assisting in the sexual function for cases of male weakness, said support comprising:

(a) an integrally deformable frame including

i. a pair of spaced apart elongage support elements adapted to extend along and support the ventral surface of the penis, each said element having a distal end and a proximal end;

ii. an inverted generally U-shaped section joining the proximal ends of said pair of support elements for extending proximally convexally over said penis; and

iii. each of said support elements having an upwardly and proximally directed terminal section integrally connected to its distal end;

said U-shaped section being manually deformable to vary the spacing between said support elements to conform to the diameter of the penis, said frame having means for varying the effective length of said frame; and

(b) a pliable tubular headpiece detachably mounted on and extending between said terminal sections and adapted to fit into the coronal sulcus of the penis to removably position the corona of the penis to the distal end of said frame.

4,262,664

ORTHOPEDIC KNEE DEVICE

Adolf Wolfer, Neckarstr. 189, 7000 Stuttgart - 1, Fed. Rep. of Germany, and Hans R. Lehneis, 255 W. Shore Dr., Massapegua, N.Y. 11758

Filed Feb. 10, 1978, Ser. No. 876,727

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2705978

Int. Cl.³ A61F *3/00*

U.S. Cl. 128—80 C **9 Claims**

1. A brace for application on a patient's leg to stabilize the knee joint and prevent knee strain, comprising:

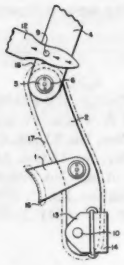
a pair of opposed rigid guide rails constructed and arranged to extend above and below the patient's knee joint on either side of his leg;

an upper cross-member mounted near the top of each guide rail and positioned to extend across the front of the patient's thigh;

a medial cross-member mounted to each of said guide rails

intermediate its ends and extending across the rear of the patient's leg in the vicinity of the knee joint; and

a lower cross member mounted to each of said guide rails near the lower end thereof and positioned to extend across the patient's shin;



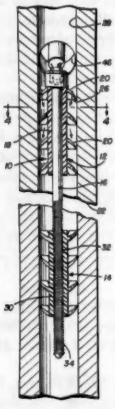
at least one of said cross-members being at least partially detachable to permit application and removal of the knee brace on the patient's leg, at least one of said upper end medial cross-members being mounted for pivotal movement with respect to said guide rails so that said at least one cross-member pivots to conform said knee brace to the patient's leg as he bends and extends the same.

4,262,665

INTRAMEDULLARY COMPRESSION DEVICE

Walter L. Roalstad, Oak Creek, Star Rte. #8, Flagstaff, Ariz. 86001, and Ernest W. Yeager, 19201 N. 21st Ave., Phoenix, Ariz. 85027

Filed Jun. 27, 1979, Ser. No. 52,822
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 BC **11 Claims**



1. An intramedullary compression device for insertion into a drilled out cavity of a bone fractured into two parts to provide fixation and compression of the bone fracture, said device comprising:

a first cavity engaging element having at least one radially extending, flexible member, said at least one radially extending flexible member being greater in diameter than its cooperating cavity and having a generally concavo-convex configuration ending in a peripheral ridge which bites into a wall of said cavity;

an axial force producing means received in said first cavity engaging element for forcing said first cavity engaging element axially toward the fracture; and

bone engaging means attached to said axial force producing means for counteracting the force transmitted to said first cavity engaging element.

4,262,666

INHALATOR-BREATHING APPARATUS

Byron G. Nelson, P.O. Box 6457, Lake Charles, La. 70606

Filed Oct. 24, 1979, Ser. No. 88,043
Int. Cl.³ A61M *15/06*
U.S. Cl. 128—203.23 **23 Claims**

1. An inhalator-breathing apparatus fitable inside the mouth of a human between cheek and teeth which apparatus comprises: elongated tube means having at least one upstream opening adapted to communicate the interior of said tube means with the atmosphere and at least one downstream opening adapted to communicate said interior of said tube means with the rear portion of said mouth, said tube means being adapted and of a length sufficient to extend from the front of the mouth back down the side of the mouth to a point adjacent the molars; retainer means disposed integrally within said tube means, a prepared source of gas-like material suspension retained in said tube means by said retainer means so that inhaled air flowing through said tube means will contact at least in part a gas-like material suspension emanating from said prepared source of gas-like material suspension therby generating an air to gas mixture transferable to said rear portion of said mouth by way of said downstream opening; and sealing means adapted to fit at least in part between frontal teeth and lips being attached to the upstream portion of said tube means thereby to seal off the flow of air through said mouth except into said tube means through said upstream opening; said upstream opening and said downstream opening in combination with the cross sectional area of said interior of said tube means being of a size sufficient to allow a flow of air through said tube means approximate to the flow of air said human could achieve through normal nasal breathing.

4,262,667

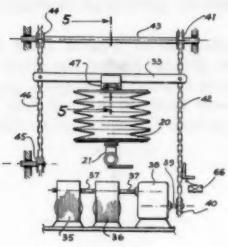
VENTILATOR FOR USE IN MEDICAL APPLICATIONS

Graham C. Grant, 19 Lockley Parade, Roseville Chase, New South Wales, Australia (2069)

Filed Aug. 21, 1979, Ser. No. 68,397
Claims priority, application Australia, Aug. 24, 1978, PD5650
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.21 **12 Claims**

12. A ventilator comprising an expansible chamber in the form of a bellows, a gas inlet/delivery port communicating with the chamber, first and second electric motors mounted to a common shaft, means for effecting cyclic energization of the respective motors whereby the shaft is driven cyclically in opposite directions, motion translating means comprising at least one endless positive drive transmission element coupling the shaft to the chamber for imparting cyclic expansion and compression strokes to the chamber in dependence on the direction of rotation of the shaft, means for adjustably timing the period of the expansion stroke imparted to the chamber and for effecting de-energization of the motor which effects said

expansion stroke after a predetermined time has elapsed, and means for sensing a predetermined compression of the chamber and for effecting de-energization of the motor which effects said compression stroke.

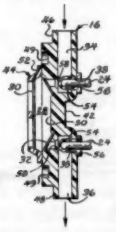


4,262,668

FIXED VOLUME INFUSION DEVICE

Bradley J. Schmidt, East Dundee, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Del.

Filed Apr. 6, 1979, Ser. No. 27,910
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 R **9 Claims**



1. An incremental fixed volume fluid control cassette for use with a flow controller having a pair of movable control arms for controlling flow through said cassette, said cassette comprising:

a housing;

a flow passageway through said housing including a fixed volume portion with an inlet and an outlet;

a pair of spaced apertures in said housing communicating with said flow passageway upstream and downstream of said fixed volume portion;

fluid control means carried by said housing in each of said apertures, said control means being adapted to engage said control arms for movement alternately into and out of said flow passageway to block or open said flow passageway;

vent opening in said housing in communication with said fixed volume portion;

hydrophobic filter means carried by said housing in the path of air venting through said vent opening to prevent the escape of liquid therethrough;

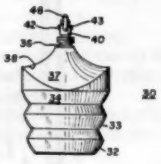
hydrophilic filter means carried in said flow passageway downstream of said fixed volume portion to prevent the passage of air to the patient.

4,262,669

ACCORDION-STYLE SYRINGES, DOUCHES AND ATTACHMENTS THEREFOR

Vincent R. Sneider, 3422 Hallcrest Dr. NE., Atlanta, Ga. 30319

Division of Ser. No. 700,838, Jun. 29, 1976, Pat. No. 4,068,662, which is a continuation-in-part of Ser. No. 592,037, Jun. 30, 1975, Pat. No. 4,014,332. This application Jan. 12, 1978, Ser. No. 868,847
Int. Cl.² A61M 1/00
U.S. Cl. 128—232 **2 Claims**



1. A prefilled accordian-style container for vaginal douches, enemas and the like, said container including: (a) a flexible container of a generally accordian configuration and having in-folding sides having a tapered configuration enabling a user to substantially empty the container of the fluid contents when the smaller closed end is brought very near the outlet of the container; (b) a contoured outlet end formed on the container so as to have a blend of concave curved forms extending from a major to a minor length and vice versa, this contoured outlet end adapted to engage a body opening and when pressed tightly thereagainst to provide a plug preventing unwanted fluid from escaping from said body opening, and (c) a closed discharge opening provided on the discharge outlet of the container, this closure having manipulative removing means which includes a sealed one-time closure cap and there is provided fast thread portions which remain with and on the discharge opening after the seal has been removed, these thread portions facilitating the mounting of a nozzle, tubing [illegible]ke on said uncovered discharge end.

4,262,670

Patent Not Issued For This Number

4,262,671

AIRWAY CONNECTOR

Jean Kersten, Villers St. Amand, Belgium, assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 31, 1979, Ser. No. 89,806
Int. Cl.³ A61J 1/08
U.S. Cl. 128—272.3 **15 Claims**

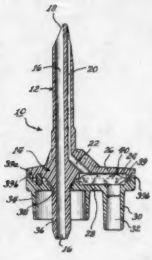
1. An airway connector for use in withdrawing solutions from bottles and comprising a spike defining a solution flow

passage and also defining an air inlet passage, the improvement comprising:

said spike being formed as an integral member with said solution flow passage and said air inlet passage opening at a tip which is adapted for inserting through a bottle closure;

a body member carried by said spike, said body member including a filter chamber extending radially outwardly from said spike, said filter chamber being eccentric to the axis of said spike;

said body member carrying a drip chamber sleeve which



surrounds the rear end of said spike, a drip chamber connected to said sleeve;

said body member defining a portion of said air inlet passage with said air inlet passage portion extending angularly in a direction that is opposite from said tip to communicate with said filter chamber; and

a filter located within said filter chamber, said filter having a surface area that is substantially greater than the cross-sectional area of the air inlet passage, with the major surface area of said filter lying in a plane that is generally perpendicular to the axis of said spike.

4,262,672

ACUPUNCTURE INSTRUMENT

Horst Kief, Londoner Ring 105-107, D-6700 Ludwigshafen/R, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 974,094

Claims priority, application Fed. Rep. of Germany, Jan. 2, 1978, 2800039

Int. Cl.[3] **A61B** *17/34*

U.S. Cl. 128—329 A **12 Claims**

1. An acupuncture instrument comprising a needle having a head and an electrical connection for applying electrical pulses to the needle, the electrical connection being a transformer arrangement including an electrical coil constituting a secondary winding of the transformer arrangement and having two poles, one of the poles being electrically connected to the needle and the other pole being insulated therefrom, the electric coil being arranged on the needle head and being capable of being surrounded by another coil constituting a primary winding of the transformer arrangement, and an annular elec-

trode electrically connected to the other pole of the secondary winding and insulated with respect thereto and vertically movably arranged on the secondary winding.

4,262,673

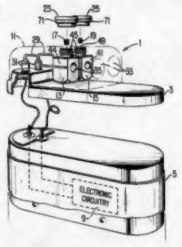
FLUID TIGHT COUPLING FOR ELECTRODE LEAD

Philip C. Kinney, Pittsburgh; Marlin S. Heilman, Gibsonia, and Albert J. Hrubes, Mars, all of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Filed Oct. 11, 1979, Ser. No. 83,967

Int. Cl.[3] **A61N** *1/00*

U.S. Cl. 128—419 P **16 Claims**



1. In a medical device fully implantable in the body of a recipient having a casing hermetically sealed from the exterior environment surrounding the casing, electrical circuitry within said casing, a fluid-tight coupling mounted on said casing for interconnecting said electrical circuitry within said casing with an electrode lead implantable in the body of the recipient, said coupling including a housing made of electrically insulating material and defining a receptacle for an electrode lead, a terminal block contained within said housing and defining a lead opening for receiving an electrically conducting portion of the electrode lead, retaining means for retaining said conducting portion in the terminal block, a retaining means opening defined by said terminal block for accommodating said retaining means in said terminal block, a housing opening,

defined by said housing, through which said retaining means can pass between the terminal block and the housing exterior, a sealing cap removably retained in said housing opening for preventing fluid communication between the housing exterior and the terminal block, and electrical conducting means for electrically interconnecting the terminal block with an electrical conductor exterior to the housing, the improvement comprising,

said terminal block defining an externally-threaded boss extending within said housing opening, and

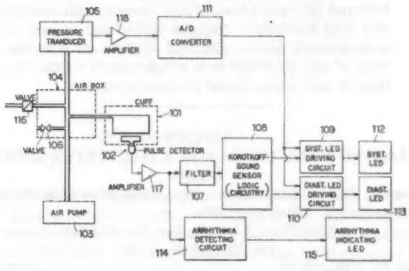
said sealing cap comprising a threaded portion threadingly connected with said terminal block boss for removably retaining said sealing cap in said housing opening.

4,262,674

SPHYGMOMANOMETER WITH AN ARRHYTHMIA DETECTING MECHANISM

Masahiro Uemura, Kasugai; Chikao Harada, Aichi; Kenichi Sakurado, Mizunami, and Tsunehito Kakumu, Gifu, all of Japan, assignors to Nippon Colin Co., Ltd., Aichi, Japan

Filed Nov. 27, 1978, Ser. No. 963,966
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—680 **10 Claims**



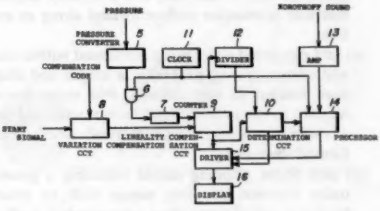
1. A sphygmomanometer comprising (1) a blood pressure measuring apparatus including a pulsation detector means which collects pulse sounds including Korotkoff sounds for electrically converting said pulse sounds into wave signals of the vascular pulse wave and outputting the same, and means for detecting the Korotkoff sounds and indicating the blood pressure value; and (2) an arrhythmia detecting means coupled to the output of said pulsation detecter means, which receives said wave signals of the vascular pulse wave output from said pulsation detector means and compares the cycle of said wave signals with a predetermined criterion for electrically detecting the irregularities, if any, in said cycle, and wherein said arrhythmia detecting means comprises: a circuit for converting a pulse interval, which spans the time froma given base point of a pulse to a corresponding given base point of the next pulse, said base points being in the same phase of successive cycles, into a representative signal corresponding to said pulse interval; window comparator means for comparing said representative signal with a predetermined criterion in order to check whether said representative signal is within the limit of allowance; and an indicating means for indicating arrhythmia by means of the output of said window comparator; whereby the sphygmomanometer is able to do diagnosis of arrhythmia simultaneously with the measurement of the blood pressure.

4,262,675

BLOOD PRESSURE MEASURING INSTRUMENT HAVING COMPENSATION CIRCUIT

Kimio Kubo, Nara, and Ryuichi Miyamae, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 30, 1978, Ser. No. 964,954
Claims priority, application Japan, Nov. 30, 1977, 52-145326
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—680 **8 Claims**



1. A sphygmomanometer comprising:

pressure detection means for measuring the applied sphygmomanometric pressure and providing an output indicative of said pressure;

means for producing signals indicative of pulsatile variations in arterial pressure in response to the variations in pressure;

a non-linear correlation function circuit for providing a non-linear correction function and generating a correction signal for each pressure sensed by said pressure detection means;

compensation circuit responsive to said correction signal for converting said output of said pressure detection means into a actual pressure value output; and

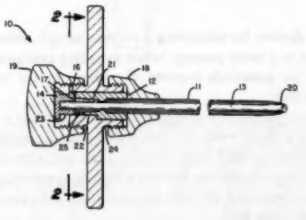
means responsive to said means for producing signals indicative of pulsatile variations for selecting the corrected actual pressure value outputs from said compensation circuit to provide an indication of blood pressure.

4,262,676

BIOPSY NEEDLE HAVING INTEGRAL STYLET LOCKING DEVICE

Khosrow Jamshidi, 610 Winston Ct., St. Paul, Minn. 55118

Filed Aug. 24, 1979, Ser. No. 69,308
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—753 **3 Claims**



1. An elongated hollow biopsy needle assembly with open distal or proximal ends, and with the distal end defining a cutting edge, said assembly including a cannula, an elongated stylet removably received within the bore of said cannula, a finger gripping means adjacent said proximal end, and coupling means for orienting said stylet within said cannula and for releasably securing said cannula to said finger gripping means;

(a) said cannula being of uniform hollow, cylindrical config-

uration throughout the major portion of its length and having an external distal end surface tapered generally uniformly, uninterrupted, toward the tip of the distal end, and an internal end surface defining an inner biopsy tissue receiving and retaining bore immediately adjacent the distal end;

(b) a generally cylindrical hub having a bore extending axially therethrough and securing the proximal end of said cannula to the inner diameter thereof, and with the bore of said hub forming an extension of the hollow cannula, a conical syringe receiving counterbore formed within the proximal end of said hub, and a radially disposed asymmetrical orientation surface formed along an end of said hub;

(c) said elongated stylet being positioned within said cannula and corresponding generally in length and shape to the bore formed in said cannula, said stylet having a cap secured to the proximal end thereof with said cap having a radially disposed asymmetrical orientation surface formed therealong;

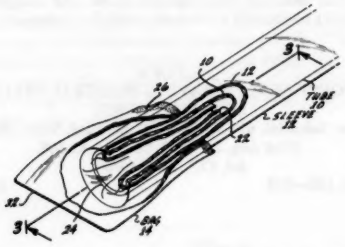
(d) said finger gripping means including a generally centrally disposed coupling means with an inner surface having a radially extending asymmetrical surface mating with the radially disposed asymmetrical orientation surface of each of said cylindrical hub and said stylet cap for orienting said cannula relative to said stylet to present a closed asymmetrical end surface.

4,262,677

CULTURE SAMPLING DEVICE AND METHOD

Robert F. Bader, 1269 N. Clark St., Los Angeles, Calif. 90069

Filed Mar. 26, 1979, Ser. No. 23,790
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—759 **14 Claims**



1. A device for obtaining a culture sample from a particular location in a body passage while avoiding contamination of the sample by materials located elsewhere in the body passage, comprising:

a sleeve of pliant waterproof material, having a proximal end and a distal end, and having an outside surface;

a relatively rigid tube, shorter than said sleeve and located within said sleeve, having a proximal end and a distal end, the distal end of said sleeve tucked into the distal end of said tube; and,

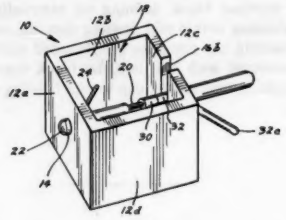
a bag of pliant waterproof material enclosing the distal end of said tube and a portion of said sleeve, and bonded to the outside surface of said sleeve to form a waterproof seal extending all around said sleeve, said bag having such a limited burst strength that the distal end of said tube can be pushed through said bag by application of a modest predetermined force to expose the portion of said sleeve that was tucked into said tube.

4,262,678

PACING LEAD WITH TINE PROTECTOR

Kenneth B. Stokes, Brooklyn Park, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 28, 1979, Ser. No. 53,002
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 **4 Claims**



1. In combination, tine protector and transvenous pacing lead comprising:

a. tine protector including four opposing walls and a bottom wall, said walls structurally connected together, a first round hole in one of said walls, and a longitudinal vertical slit and a second round hole in the other of said opposing wall, said round holes geometrically opposing each other;

b. transvenous pacing lead including an electrode axially secured to a space-wound coil covered with insulation and a plurality of outward angularly extending tines from said electrode, and;

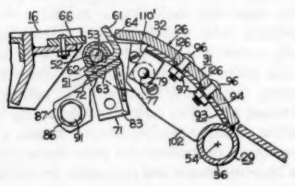
c. said electrode frictionally engaged within and to said first hole and said space-wound coil covered with insulation of said lead frictionally engages within and to said second hole through said longitudinal vertical slit whereby said tines of said electrode lead are protected within the confines of said walls of said tine protector.

4,262,679

CLOSING MECHANISM FOR A HARVESTER SAFETY DOOR

Mark C. James, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 27, 1980, Ser. No. 134,746
Int. Cl.³ A01F *12/16*
U.S. Cl. 130—27 JT **2 Claims**



1. A harvester having a threshing chamber, a crop inlet to the threshing chamber, a rotatable threshing rotor within the threshing chamber and a concave beneath the rotor having a predetermined threshing clearance with the latter, characterized by

a safety door constituting a portion of a floor of the inlet to the threshing chamber forward of said concave, said safety door including

a main body portion pivotally connected at its front end to the harvester on a first horizontal axis generally parallel to the axis of said threshing rotor and

a lip portion pivotally connected to the rear of the main body portion for pivotal movement about a second horizontal axis generally parallel to said first horizontal

axis between a detented operating position in which an edge of said lip is in overlapping engagement with the front end of said concave and a tripped position in which said lip is disengaged from said concave,

a detent mechanism carried by said safety door for normally maintaining said lip portion rigid with respect to said body portion

a manually operated control for said lip portion operable to pivot said lip portion from its tripped position to its detented operating position including a transversely extending part the end of which presents a wrench receiving head, and

a manually operated control for said main body portion including a wrench receiving part nonrotatably secured to said main body portion in coaxial relation to said first horizontal axis.

4,262,680

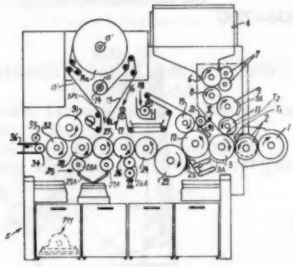
METHOD AND APPARATUS FOR ATTACHING FILTER PLUGS TO CIGARETTES OR THE LIKE

Alfred Hinzmann, Richmond, Va., assignor to Hauni-Werke Körber & Co. Kg., Hamburg, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,158

Int. Cl.³ A24C 5/50

U.S. Cl. 131—94 **19 Claims**



1. A method of processing rod-shaped filter plugs prior to their attachment to cigarettes or analogous rod-shaped tobacco-containing articles by means of adhesive-coated uniting bands, comprising the steps of applying heat and pressure to selected narrow strip-shaped portions of peripheral surfaces of rod-shaped filter plugs to smoothen such selected portions, said selected portions extending in parallelism with the axes of the respective filter plugs; and thereupon attaching portions of adhesive-coated uniting bands to said selected portions.

4,262,681

WRAPPER DISTRIBUTING SUPPORT BAND FOR THE MANUFACTURE OF CIGARS

Pierre Waegaert, Bordeaux, and Jean-Claude Battard, Saran, both of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Continuation of Ser. No. 897,672, Apr. 19, 1978, abandoned. This application Jan. 18, 1980, Ser. No. 113,260

Claims priority, application France, Apr. 20, 1977, 77 11809; Nov. 18, 1977, 77 34680

Int. Cl.³ A24C 1/28

U.S. Cl. 131—105 **11 Claims**

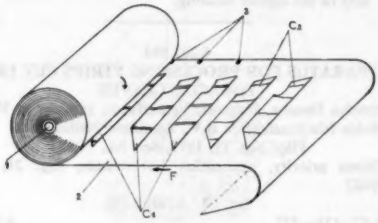
1. A method for forming a spool for storing wrappers of tobacco leaves for subsequent use in feeding cigar manufacturing machines, the spool comprising a support band wound on itself and having the wrappers interleaved therein, the wrappers being formed from left half leaves and right half leaves of tobacco as defined when looking at the tobacco leaf with its point upward and its ribs protruding behind, the method comprising the following steps:

(a) cutting the maximum quantity of wrappers from one of said tobacco leaves, such cutting being carried out to the side of the leaf main rib which defines said left half leaves;

(b) transferring the left wrappers to the support band successively while winding the support band on itself with interleaved left wrappers until said maximum quantity of left wrappers is wound into the support band;

(c) turning the tobacco leaf from step (a) over face for face;

(d) cutting the maximum quantity of right wrappers from tobacco leaves by cutting from the side of the leaf main rib which defines said right half leaves of turned leaf from step (c);



(e) transferring the right wrappers from step (d) to the support band successively while winding the support band on itself with interleaved right wrappers until said maximum quantity of right wrappers is wound into the support band; and

(f) unwinding the spool for feeding said cigar manufacturing machines,

whereby the face of the tobacco leaf presented by the right wrappers is the reverse of the face of the tobacco leaf presented by the left wrappers.

4,262,682

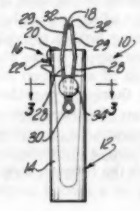
COMBINATION CIGARETTE HOLDER AND LIGHTER

Douglas C. Banyash, 6691 Teal Rd., Petersburg, Mich. 49270

Filed Sep. 18, 1979, Ser. No. 76,774

Int. Cl.³ A24F 47/00

U.S. Cl. 131—185 **4 Claims**



1. A smoking device comprising:

a cigarette lighter having a housing, said housing having a flat side, and means for activating said cigarette lighter to produce a flame at a predetermined position; and

means secured to said flat side of said lighter housing for detachably holding an elongated cigarette to said lighter housing so that one end of the cigarette is maintained substantially at said predetermined position, said holding means comprising a one-piece cigarette holding member constructed of a resilient material and having a pair of elongated arms, each arm having a free end which is positioned adjacent the free end of the other arm, and means for slidably mounting said holding member to said lighter housing between an extended and a retracted position wherein said extended position and the free ends of the arms are spaced apart from each other, and means for

moving the free ends of the arms toward each other to engage the outer periphery of the cigarettes upon moving said holding member from its extended and to its retracted position and wherein said slidable mounting means further comprises a retainer attached to said lighter housing, said retainer having a channel formed along one side, said one sideof said retainer being attached to said flat side of said housing with a portion of said elongated arms within said channel so that said arms are entrapped between said retainer channel and said flat side of said lighter housing and so that said holding member is flush against the flat side of the lighter housing.

4,262,683

APPARATUS FOR PROCESSING STRIPS CUT FROM TOBACCO LEAVES

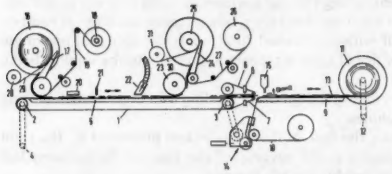
Bernardus Daenen, Ultgeest, Netherlands, assignor to Van der Molen Machinefabrick B.V., Zaandam, Netherlands

Filed Sep. 11, 1979, Ser. No. 74,521

Claims priority, application Netherlands, Sep. 21, 1978, 7809622

Int. Cl.³ A24B *3/00*

U.S. Cl. 131—327 **4 Claims**



1. Apparatus for processing strips cut from tobacco leaves, consisting essentially of a first conveyor for said strips, an intermediate conveyor contiguous with said first conveyor, and provided with means for detecting the strip length, and a third conveyor contiguous with said intermediate conveyor and formed by a support on which a first carrier of synthetic plastics material, being wound off a reel, can be moved, which first carrier can again be wound on a roller or reel, there being provided at the beginning of the third conveyor means for the supply of glue or a like adhesive for gluing strips together into a ribbon and there being further provided means periodically interrupting a constant supply of the plastics carrier in accordance with the length of a tobacco strip being transported, characterized in that there are provided above the first conveyor detection means, followed by cutting means for the tobacco strips, and means for removing from the conveyor tobacco strips satisfying a pre-determined length, winding means combined with the tobacco strip removing means and means for the supply of a second carrier of synthetic plastic material.

4,262,684

FOLDING PIPE STAND

Gary D. Merigan, 38250 Fairway, Clinton Township, Clinton County, Mich.

Filed Oct. 24, 1979, Ser. No. 88,050

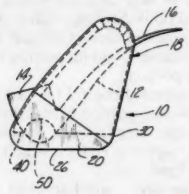
Int. Cl.³ A24F *9/14*

U.S. Cl. 131—260 **7 Claims**

1. A folding stand for holding a smoking pipe comprising:

a pair of rigid support plates, each plate having a first surface engaging edge portion and a second edge portion angled with respect to said first edge portion;

hinge means for connecting said support plates together at said second edge portions, said plates being pivotal between a first position in which said first edges are substantially parallel to each other and said plates substantially flatly abut against each other, and a second position in which the planes of said support plates intersect at an angle less than 180°; and



a collapsible support member secured to said support plates and extending between the facing surfaces of said support plates.

4,262,685

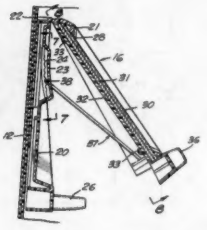
BEAUTY CASE

David E. Workman, Evergeen; Robert L. Bromley, Aurora, both of Colo.; Don N. Burzen, Groton, Mass., and Judith K. McNeill, Aurora, Colo., assignors to Samsonite Corporation, Denver, Colo.

Filed Jul. 30, 1979, Ser. No. 61,751

Int. Cl.³ A45D *40/00*

U.S. Cl. 132—79 G **4 Claims**



1. A beauty case having an open-top, shell-like base with a cover hingedly received thereon, comprising in combination:

a mirror assembly including a backplate integrally connected to an angularly adjustable mirror-carrying frame via a continuous thinwall flexible hinge, said backplate being affixed to an inside surface of the cover;

a plurality of mutually spaced raised ribs and a spaced overlying guide, and a brace having first portions thereof located between the guide and ribs and other brace portions being pivotally interconnected with said mirror-carrying frame, said brace first portions being resiliently clamped by the guide when said brace is located in an intervening space between two adjacent ribs; and

an organizing tray removably mounted onto brackets secured to opposite walls of the shell-like base.

4,262,686

APPARATUS FOR THE ELECTRICALLY CONTROLLED PROPORTIONING AND MIXING OF GASES

Ulrich Heim, Reinfeld, and Scato Albarda, Mölln, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,105

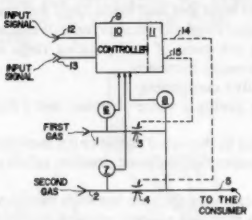
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831856

Int. Cl.³ G05D *11/13*

U.S. Cl. 137—7 **6 Claims**

5. A method of proportioning the relative amounts of different gases fed from different supply lines into a common mixed gas line with controllable valves in each of the gas supply lines openable in pulses to supply quantities of gas to the mixed gas

line comprising, grouping the pulses for the control of the respective valves into pulse constellations for each respective valve, with the minimum width of each pulse of each constellation being determined by a minimum switching time for a respective one of the valves and the maximum width of each pulse being determined by a fixed pulse frequency, fixing the



pulse frequency at a selected value, varying the width of pulses in each pulse constellation for changing gas supplied by each of the valves respectively, and deleting any number of pulses from each of the pulse constellations for reducing a flow of gas from each of the valves respectively further than possible from a reduction of the pulse width alone.

4,262,687

ELECTROMAGNETIC VALVE SECURITY DEVICE FOR FUEL SUPPLIES

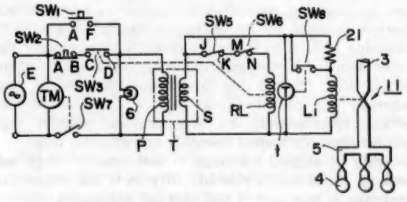
Toshiji Kobayashi, Takamori, Japan, assignor to Iida Sankyo Co., Ltd., Iida, Japan

Filed Nov. 13, 1978, Ser. No. 959,965

Claims priority, application Japan, Nov. 11, 1977, 52/134764; May 29, 1978, 53/71581[U]

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—39 **9 Claims**



1. An electromagnetic valve security device for fluid fuel, comprising a source of electric power, an electromagnetic valve operative to open and close a fuel flow pipe, and an electromagnetic valve circuit operating said valve, the improvement wherein said valve circuit comprises an attracting circuit including a valve coil for operating said valve, an attraction holding circuit, a terminal of said attraction holding circuit being coupled to one terminal of said electric source, and an attracting switch coupled to said valve coil, one terminal of said attracting circuit being coupled to said one terminal of said electric source in parallel to said attraction holding circuit through said attracting switch, said attracting switch being closed only when attraction operation for said valve coil is effected, and the other terminal of said attracting circuit being connected to a second terminal of said electric power source; said valve circuit further comprising a transformer interposed between said power source and said electromagnetic valve circuit, said attraction circuit and said attraction holding circuit being disposed on the secondary side of said transformer; a relay switch operating coil in parallel with the secondary side of said transformer; and a hazard detecting switch in series with said relay switch operating coil and in parallel with the secondary side of said transformer.

4,262,688

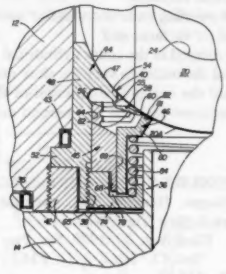
METAL SEAT ASSEMBLIES FOR VALVES

Ludwik S. Bialkowski, Troy, Ohio, assignor to ACF Industries, Incorporated, New York, N.Y.

Filed May 25, 1979, Ser. No. 42,394

Int. Cl.³ F16K *51/00, 25/00, 5/00;* **F16J** *15/38*

U.S. Cl. 137—242 **9 Claims**



1. In a valve including a valve body having a valve chamber and a flow passage communicating with the valve chamber, and a valve member mounted in said valve chamber for movement between open and closed positions relative to the flow passage; an improved seat assembly about said flow passage adjacent the valve member, said seat assembly comprising:

an outer metal ring having an inwardly extending flexible metal lip for engaging in sealing relation the adjacent sealing surface of the valve member;

an intermediate concentric support ring havng cantilevered spring fingers engaging the flexible metal lip to urge the lip into sealing engagement with the valve member;

an inner concentric wiper ring positioned adjacent said support ring and adapted to contact said sealing surface of the valve member closely adjacent the flexible lip to act as a wiper along the sealing surface of the valve member, and a spring urging the wiper ring into contact with the sealing surface of the valve member.

4,262,689

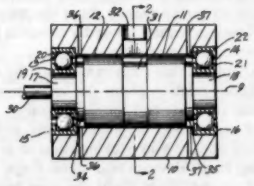
RESPIRATOR VALVE

Jerome A. Rodder, 775 Sunshine Dr., Los Altos, Calif. 94022

Filed Oct. 13, 1978, Ser. No. 951,167

Int. Cl.³ F16K *5/10, 5/22*

U.S. Cl. 137—246.12 **17 Claims**



1. A respirator valve comprising:

a first member having a cylindrical bore with a first cylindrical surface;

a second cylindrical member with a second cylindrical surface, the second member fitting inside the bore of the first

member with a small clearance such that the first and second cylindrical surfaces lie adjacent to each other;

lubricated bearings on either side of the inlet and outlet openings for rotatably supporting the first and second members with respect to each other in axial alignment about an axis of rotation to form a small unsealed annular space between the first and second cylindrical surfaces;

passage means leading from the annular space to the exterior of the first member between the inlet and the outlet and the bearings;

an inlet opening into the annular space through one of the cylindrical surfaces;

an outlet opening into the annular space through the one cylindrical surface; and

a groove formed in the other cylindrical surface between the inlet and the outlet to vary the flow resistance between the inlet and the outlet as a function of the angular displacement between the first and second members.

4,262,690

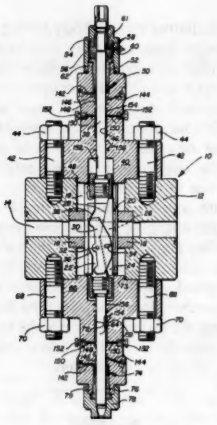
HIGH PRESSURE STEM PACKING FOR GATE VALVES

Scott W. Binegar, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,421

Int. Cl.[3] F16K *3/14;* F16J *15/00*

U.S. Cl. 137—246.13 **27 Claims**



1. In a valve having a valve body with a fluid flow passage therethrough, a valve member mounted for movement between an open position and a closed position relative to the flow passage, and a movable valve stem connected with the valve member to effect movement thereof between the open and closed positions, said valve body receiving the valve stem and defining an annular space about the stem terminating in a shoulder facing generally inwardly towards the flow passage, the improvement comprising:

a plurality of packing rings in said annular space arranged in contiguous relation about the valve stem to effect a seal between the stem and the valve body;

a pair of metal rings disposed closely around the stem on opposite sides of said packing rings so as to sandwich said packing rings between said metal rings; and

a pair of retainer rings about the stem between which said metal rings and said packing rings are sandwiched, one of said retainer rings having an inwardly facing surface upon which fluid pressure from said flow passage acts so that said retainer rings are urged toward one another to squeeze said packing rings against the stem and the valve body, thereby increasing the effectiveness of the seals with the stem and the valve body created by said packing rings as the fluid pressure increases;

said retainer rings including camming means including a portion of said camming means interacting with said metal rings in a manner to force said metal rings against the stem and the valve body when said retainer rings are urged toward one another by the fluid pressure from the flow passage, thereby impeding extrusion of said packing rings between the stem and said metal rings and the valve body and said metal rings, the effectiveness of said metal rings in preventing extrusion of said packing rings increasing as the fluid pressure increases.

27. A gate valve comprising:

a valve body having a valve chamber and a fluid flow passage;

a gate mounted in the valve chamber for movement between an open position and a closed position relative to the flow passage;

a valve stem carrying the gate between the open and closed positions in response to axial reciprocation of the stem;

a bonnet assembly mounted to the valve body and having a bore in which said valve stem is received for axial reciprocation, said bonnet assembly defining an annular space in said bore around the valve stem and a shoulder facing generally toward the valve chamber at an outer end of said annular space;

a pair of packing retainer rings positioned in said annular space with one retainer ring disposed against said shoulder and the fluid pressure in said valve chamber acting to urge the other retainer ring toward said one retainer ring, each retainer ring having a beveled inside edge adjacent the valve stem and a beveled outside edge adjacent the bonnet assembly;

a plurality of packing rings sandwiched between the retainer rings in sealing relation with the valve stem and bonnet assembly, said packing rings being squeezed against the stem and bonnet assembly when said other retainer ring is urged toward said one retainer ring;

a rigid chamfer ring positioned against each beveled edge of each retainer ring between the retainer ring and the adjacent packing ring, each chamfer ring having a cam surface thereon engaged by the corresponding beveled edge in camming fashion to force the chamfer rings against the valve stem and bonnet assembly in response to movement of said other retainer ring toward said one retainer ring, whereby said chamfer rings impede extrusion of said packing rings between the valve stem and chamfer rings and between the bonnet assembly and chamfer rings;

a plurality of aligned openings in said retainer rings and packing rings, and a plurality of pins in the respective openings, at least one of said pins has a threaded connection with said other retainer ring, a beveled edge around each opening of each retainer ring confronting the adjacent packing ring;

an annular metal gasket positioned against each beveled edge of each retainer ring between the retainer ring and the adjacent packing ring, each gasket having a chamfer which is engaged by the corresponding beveled edge in camming fashion to urge the gaskets against the pins upon movement of said other retainer ring toward said one retainer ring, whereby extrusion of said packing rings between said pins and gaskets is impeded;

at least one metal ring mounted in the bonnet assembly in sealing contact with the valve stem at a location inwardly of said other retainer ring, said metal ring scraping foreign material from the valve stem upon axial reciprocation of the stem;

a sealant passage in the bonnet assembly located outwardly of said metal ring for injecting sealant against the valve stem; and

a groove in the valve stem extending past said metal ring to provide communication between the sealant passage and valve chamber when said gate is in the closed position, thereby permitting application of sealant through said

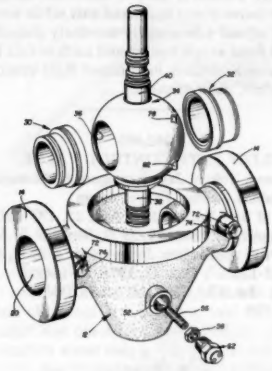
passage to the valve chamber in the closed position of the gate.

4,262,691

CAM MEANS FOR BALL VALVE SEAT RINGS

Gary W. Kacal, East Bernard, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,593
Int. Cl.³ F16K *43/00, 25/00*
U.S. Cl. 137—315 **8 Claims**



6. In a ball valve having a valve body with inlet and outlet flow passages and a valve chamber between the flow passages, a ball member mounted in said valve chamber for rotation between open and closed positions relative to the flow passages and having a bore therethrough, a cover plate removably connected to the valve body to permit removal of the ball member from the body when the plate is removed from the body, and a pair of opposed seat rings mounted in said body about said flow passages for floating back and forth longitudinal movement relative to the ball member and being biased into sealing engagement with the ball member, an improved means to permit in-line removal of the seat ring comprising:

a removable ball member stop carried by the valve body and movable between a first operable position in which the ball member stop limits the normal rotational stroke of the ball member fully opened and closed positions to a maximum not substantially greater than around ninety degrees (90°), and a second operable position in which the ball member stop allows the ball member to freely rotate three hundred sixty degrees (360°);

a pair of cam members carried by the ball member to engage the seat rings when the ball member is rotated beyond its normal rotational stroke, said cam member upon the movement of said stop of the second position and upon rotation of the ball member past its normal rotational stroke engaging the seat rings simultaneously to cam the seat rings to a fully retracted position away from the ball member upon the rotation of the ball member approximately ninety degrees (90°) past its fully open or fully closed positions; and

means to releasably hold the seat rings in said fully retracted position to permit a removal of the ball member.

4,262,692

BELL TRAP AND CHECK VALVE COMBINATION

Mark A. Sampson, 509 N. Washington St., Titusville, Pa. 16354

Filed Nov. 16, 1979, Ser. No. 94,983
Int. Cl.³ F16K *31/22*
U.S. Cl. 137—433 **9 Claims**

1. In combination, a bell trap and a float type check valve,

the bell trap has a hollow cuplike body **(12)** with an open top and an open outlet opening **(14)**,

the check valve **(11)** is supported in said body,

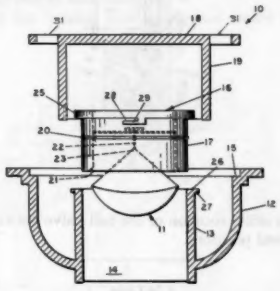
a tubular member **(13)** in said cuplike body surrounding said outlet opening,

a cover support means **(15)** on the upper edge of said body for supporting said cover,

a check valve support,

said check valve support having a tubular guide member **(17)** fixed thereto and adapted to be telescopically received in said tubular member **(13)**,

and bar means **(28)** on said guide member **(25)** for supporting said check valve,



said trap has a lid **(18)** and a downwardly extending cylindrical member **(19)** on said lid adapted to received between said body **(129** and said tubular member **(13)** providing a space therebetween and providing a space between said cylindrical member and said tubular member to enable water to flow through openings in said cover into said spaces and over said tubular member and through said check valve,

a valve seat **(21)** on said guide member **(17)**,

said valve **(11)** being adapted to flow up into engagement with said seat **(21)** to close off the backflow of water through said outlet opening **(14)**.

4,262,693

KELLY VALVE

Bernhardt F. Giebeler, San Bernardino, Calif., assignor to Bernhardt & Frederick Co., Inc., San Bernardino, Calif.

Filed Jul. 2, 1979, Ser. No. 53,854
Int. Cl.³ E21B *43/12*
U.S. Cl. 137—494 **12 Claims**

1. A valve structure for installation in a drilling fluid line at an end of a drill kelly to control flow of drill fluid therethrough, comprising:

a. a tubular housing having a fitting at each end for removably installing the housing at either end of the drill kelly;

b. a journal sleeve mounted in the housing and having diametrically disposed journal pins;

c. a ball valve rotatable on the journal pins and having a bore movable between an open position coaxial with the journal sleeve and a transverse closed position;

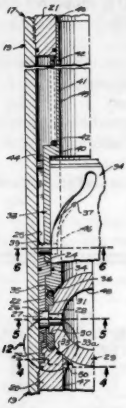
d. a gear sleeve coaxial with the journal sleeve;

e. a gear drive disposed between the ball valve and gear sleeve;

f. a drive sleeve interposed between the journal sleeve and gear sleeve including radial drive pins protruding radially inwardly and radially outward therefrom;

g. and longitudinal grooves provided in the journal sleeve

and gear sleeve, one of the grooves being helical whereby longitudinal movement of the sleeves causes the gear



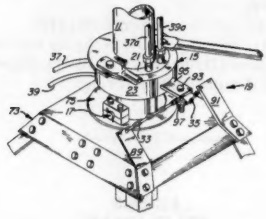
drive to effect rotation of the ball valve between its open and closed positions.

4,262,694

CENTRAL PIVOT ASSEMBLY FOR A SELF-PROPELLED, CENTER-PIVOT IRRIGATION SYSTEM

James R. McConnell, Colorado Springs, Colo., assignor to Tumac Industries, Inc., Colorado Springs, Colo.

Filed May 12, 1978, Ser. No. 905,338
Int. Cl.³ B05B 3/12
U.S. Cl. 137—580 **11 Claims**



1. A central pivot assembly for use with a self-propelled, center-pivot irrigation system, said assembly comprising:

a conduit member extending along an axis of symmetry,

means for pivotably mounting said conduit member for movement about a pivotal axis, said pivotal axis being substantially perpendicular to said axis of symmetry of said conduit member,

means for supporting said pivot means for movement about a fixed axis with said pivotal axis thereof remaining substantially in a plane perpendicular to said fixed axis,

first and second substantially annularly shaped members, said first member having an outer surface extending about a first axis of symmetry, said second member having an inner surface extending about a second axis of symmetry and forming a mating surface for the outer surface of said first member, at least one of said inner and outer mating surfaces having a first, main channel extending thereabout, each of said first and second members further having a first, open-ended channel in fluid communication with said first, main channel,

means for fixedly attaching at least one of said first and second members to said conduit member with the axis of symmetry of said one of said first and second members substantially aligned with the axis of symmetry of said conduit member,

means for supporting said first and second members for movement relative to each other with said inner and outer surfaces in a mating relationship and said first and second axes of symmetry substantially aligned, and,

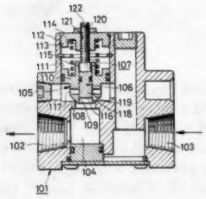
means for limiting the movement of the other of said first and second members about said fixed axis whereby said conduit member and said one of said first and second substantially annularly shaped members affixed thereto are free to move about said fixed axis while movement of said other of said substantially annularly shaped members about said fixed axis is limited and each of said first, open-ended channels remains in constant fluid communication with said first, main channel.

4,262,695

FLOW RATE CONTROL VALVE

Tomomitsu Iizumi, Tokyo, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 827,813, Aug. 25, 1977, abandoned.
This application Sep. 19, 1979, Ser. No. 77,154
Claims priority, application Japan, Sep. 2, 1976, 51-116999; Sep. 9, 1976, 51-120527; Oct. 27, 1976, 51-144310
Int. Cl.³ F15B 11/04, 13/042
U.S. Cl. 137—599 **1 Claim**



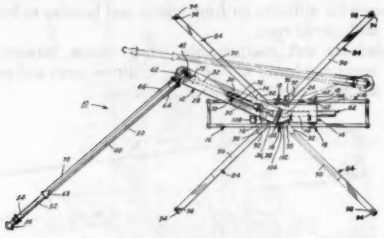
1. A fluid flow rate control valve for effecting fluid flow therethrough in two directions comprising: means defining a first port; means defining a second port; means defining a first fluid flow passage and a second fluid flow passage extending as parallel fluid flow paths between said first port and said second port; pressure adjusting valve means responsive to pressure at said first port for affecting regulated pressure fluid flow from said first port to said second port through said first flow passage; said pressure adjusting valve means including pressure adjusting means for adjusting the pressure at which said pressure adjusting valve means open to effect said fluid flow from said first port to said second port; and throttle valve means responsive to pressure at said second port for effecting reverse fluid flow from said second port to said first port through said second flow passage; said pressure adjusting valve means being structured to include valve seat means and a valve seat means engaging portion closing said first fluid flow passage when in engagement with each other, with said pressure adjusting means operating to urge said valve seat means engaging portion toward the closed position, and surface means located within said first fluid flow passage on the side of said valve seat means toward said first port; said surface means being exposed to pressure at said first port to unseat said valve seat means engaging portion when the force applied thereto exceeds the force of said pressure adjusting means urging said valve seat means engaging portion toward the closed position; said pressure adjusting valve means and said throttle valve means being structurally incorporated with each other to form a composite valve assembly, said pressure adjusting valve means including a valve body formed as a piston and said throttle means being formed by a needle valve body extending centrally through said piston within an opening therein, said needle valve body being adjustable in position to define a throttling opening through which said reverse fluid flow occurs.

4,262,696

SWIVEL ARM CONCRETE PLACER

Robert F. Oury, Hampshire, Ill., assignor to Rotec Industries, Inc., Elmhurst, Ill.

Continuation of Ser. No. 906,315, May 16, 1978, abandoned.
This application Jan. 15, 1980, Ser. No. 112,257
Int. Cl.[3] B67D *5/60, 5/64*
U.S. Cl. 137—615 6 Claims



1. A device for placing concrete mix from a pipe into a concrete pour area, said device comprising, in combination:

a traveling carrier member;

an arm structure and a first elongated arm member and a second elongated arm member, said first arm member mounted and pinned on said traveling carrier member for rotation about only a first vertical axis and having a free end, said second arm member having a free end and being mounted and pinned on said free end of said first arm member for rotation about a second vertical axis and pivotal movement about a horizontal axis;

means for piping said concrete from said pipe including a first piping section mounted on said carrier member a second piping section mounted on said arm member and connected to said first piping section for rotation with said first arm member, and a third piping section mounted on said second arm member and connected to said second piping section for rotation and pivoting movement with said second arm member, said third piping section having an open end at the free end of the second arm member for discharging said concrete mix; and

means for stabilizing said carrier member and said arm structure, said means including four rigid, unitary and elongated outrigger members each mounted and pinned on said carrier member about joints having third vertical axes, said third vertical axes being vertical relative to said first and second vertical axes for supporting said carrier member;

whereby said device may be located in or adjacent said concrete pour area and said concrete mix may be accurately placed by rotating said first arm member, and rotating and pivoting said second arm member of said arm structure.

4,262,697

AIR VALVE AND PRESSURE RESPONSIVE ACTUATOR

Allen V. C. Davis, 5600 Alta Canyada Rd., La Canada, Calif. 91011

Filed Jan. 4, 1979, Ser. No. 930
Int. Cl.[3] F16K *11/04*
U.S. Cl. 137—625.5 2 Claims

1. In combination:

a body having an elongated chamber therein,

said body having spaced passages in fluid communication with the middle and end portions of said chamber;

valve seats at the ends of the middle chamber portion;

a diaphragm spanning the outer part of one of the end portions of said chamber;

a poppet between said valve seats;

and means including a member outside said body for effecting movement of said poppet into engagement with one of said valve seats, and causing said diaphragm to move with said poppet,

said means including a first pin extending through said one end chamber portion between said diaphragm and said poppet,

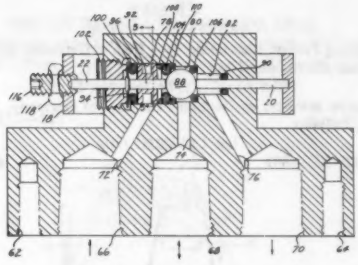
a second pin extending through the remaining end chamber portion from the poppet to the exterior of said body,

a third pin extending from said diaphragm to the exterior of said body,

said outside member having ends engaging the outer ends of said second and third pins,

said outside member including adjustment means engaging the outer end of said third pin;

and means for locking said adjustment means in position



after operation thereof to cause the inner ends of said first and second pins to engage said poppet,

said diaphragm assuming a concave form when moved in one direction with said poppet, and a convex form when moved in the opposite direction with said poppet,

said diaphragm in its concave form having an effective area approximately equal to the area of said poppet circumscribed by the nearest valve seat,

and said diaphragm in its convex form having an effective area approximately equal to the area of said poppet circumscribed by the other valve seat,

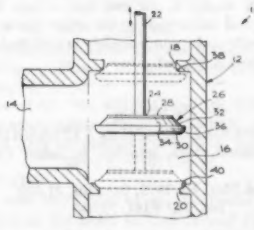
the effective area of said diaphragm being sufficiently different from that of the poppet area circumscribed by the one of said valve seats to cause said poppet to remain sealingly engaged by such one valve seat until force is exerted on said outside member to move said poppet away from such one valve seat.

4,262,698

VALVE

Larry D. Fields, Myra Loma, Calif., assignor to Yardney Electric Corporation, Pawcatuck, Conn.

Filed Dec. 26, 1979, Ser. No. 106,575
Int. Cl.[3] F16K *1/36*
U.S. Cl. 137—625.5 8 Claims



1. In a valve having a valve housing defining first and second

valve openings spaced longitudinally from each other within said housing, a valve sealing element in said housing and a valve stem connected to said valve sealing element for movement of said valve sealing element in said housing between said two openings, the improvement which comprises a three-piece valve sealing element, said valve sealing element comprising, in combination:

(a) a first hard retainer;

(b) a second generally cup-shaped hard retainer spaced from first retainer; and,

(c) a resilient sealing component disposed between and abutting said first and second retainers, said sealing component having an exposed sloped peripheral sealing surface engageable with said housing to seal said first opening, and said second retainer having a curved peripheral surface engageable with said housing to seal said second opening.

4,262,699

SANITARY FITTING

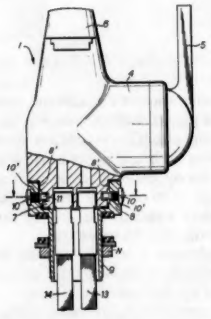
Wolfgang Fabian, Mannheim, Fed. Rep. of Germany, assignor to American Standard Inc., New York, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,937

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2829081

Int. Cl.³ E03C *1/04*

U.S. Cl. 137—801 **4 Claims**



1. A sanitary fitting adapted to be mounted on a sanitary fixture such as a kitchen sink or a lavatory, said fitting comprising:

a tubular manifold removably mounted to said fixture in fixed position;

a valve body having a base including water inlet openings to connect said sanitary fitting to a source of water;

a spout integrally formed with said valve body;

said base of said valve body and said manifold being in sliding frictional engagement and forming a rotatable joint;

coupling and tensioning means removable mounting said valve body and spout to said manifold; and

flexible hose means adapted to be coupled between said water supply means at one end and to said water inlet openings of said valve body at the other end so that when said valve body and spout assembly are rotated, said flexible hose means is rotated.

4,262,700

BROAD-BAND PULSATION ATTENUATOR

Carl J. Moen, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 16, 1979, Ser. No. 21,082

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—26 **8 Claims**

1. An insert type attenuator for a liquid or liquid suspension comprising:

a housing,

a conduit positioned within said housing,

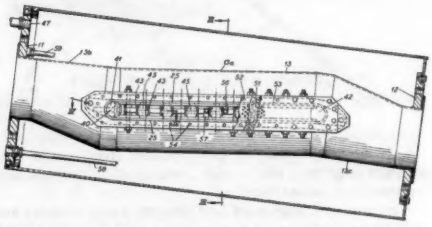
a flexible diaphragm having a pair of substantially horizontal spaced runs positioned in said conduit, said pair comprising an upper run and a lower run,

means for flowing said liquid or liquid suspension through said conduit above one and below the other of said spaced runs,

means for introducing pressurized air into said housing,

means for diffusing air from within said housing to between said spaced runs,

relatively soft compressible spring means between said upper and lower runs spacing said runs apart and providing stiffness and acoustical resistance,



first valve means positioned adjacent to and below the upper run, and

second valve means positioned adjacent to and above the lower run,

said first and second valve means being closed when the pressure of the liquid or liquid suspension is at least equal to the sum of air pressure acting on opposite sides of the runs plus the effective pressure from said spring means, said first and second valve means being opened upon deflection of said upper and lower runs as the sum of spring pressure plus the air pressure exceeds the pressure of the liquid or liquid suspension.

4,262,701

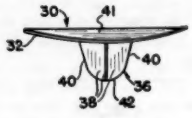
CONCRETE PIPE LIFT HOLE PLUG

Roger R. Beacom, 942 W. Douglas Ct., Venice, Fla. 33595

Filed Aug. 13, 1979, Ser. No. 65,936

Int. Cl.³ F16L *55/16*

U.S. Cl. 138—89 **9 Claims**



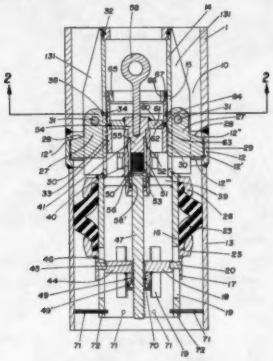
1. A plug comprising a head having a top surface and a bottom surface and a shank projecting from said bottom surface of said head, said head being substantially a thin plate and said shank having a centerline substantially orthogonal to said head bottom surface and extending from the center of said head bottom surface, said shank being formed of at least a pair of substantially thin plate flat fin-like members projecting substantially orthogonal to said head bottom surface, said fin-like members being interconnected along said centerline and each having an outer edge tapering from said head bottom surface to the end of said shank and each being disposed in a plane extending radially from said common centerline.

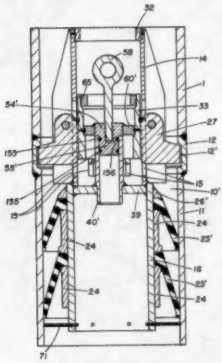
4,262,702

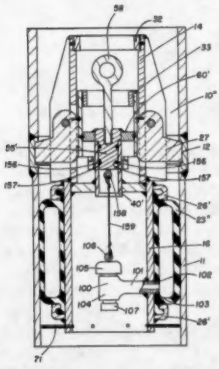
CONDUCTOR PIPE PLUG

Steven G. Streich, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 20, 1979, Ser. No. 105,458
Int. Cl.³ F16L *55/12, 55/10*
U.S. Cl. 138—89 **31 Claims**







1. A removable plug for temporarily sealing the interior of an annular member to prevent the flow of fluid therethrough, said removable plug comprising:

plug body means disposed within said annular member, said plug body means comprising:

sealing mandrel means;

sealing member means located on the sealing mandrel means for sealingly engaging the interior of said annular member;

locking dog means pivotally mounted on said plug body means for retaining said plug from axial movement in at least one direction in said annular member;

dog locking sleeve means abutting the locking dog means in releasable engagement therewith; and

pressure equalization plug means abutting the dog locking sleeve means in releasable engagement therewith for allowing the flow of said fluid through said plug, thereby allowing the pressure of said fluid to substantially equalize in said annular member and across said plug before the removal of said plug from said annular member.

4,262,703

IMPACT RESISTANT CONTROL LINE

Boyd B. Moore, and Clarence E. Kendall, Jr., both of Houston, Tex., assignors to Custom Cable Company, Houston, Tex.

Filed Aug. 8, 1978, Ser. No. 932,084
Int. Cl.³ F16L *11/08*
U.S. Cl. 138—115 **1 Claim**

1. An impact-resistant multiple control line cable for attaching along the side of an underwater flow line comprising a flat-sided body of resilient elastomeric material that is substantially wider than it is thick to allow the body to be bent around its longitudinal axis to conform to the curvature of the flow line to which it is attached, a plurality of control lines embedded in the body and extending parallel to the longitudinal axis thereof, said control lines being spaced apart along a line transverse the longitudinal axis of the body and equidistant from the flat sides of the body, and a plurality of tensile members, for carrying any tensile load imposed on the control line, positioned with their longitudinal axes on the same transverse line along which the control lines are spaced to be equidistant between the flat sides of the body, said tensile lines having a diameter substantially greater than the control lines and spaced so that a line tangent to the outer surface of two adjacent tensile lines will extend above the control lines between them on the opposite side from the flow line to which the cable is attached to provide protection to the control lines.

4,262,704

HIGH PRESSURE REINFORCED HYDRAULIC HOSE

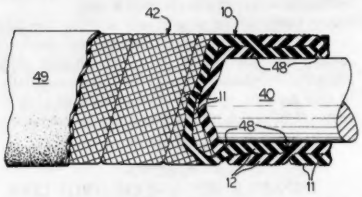
Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 937,974, Aug. 30, 1978, abandoned, which is a continuation of Ser. No. 673,187, Apr. 2, 1976, abandoned. This application Jul. 9, 1979, Ser. No. 55,674
Int. Cl.³ F16L *11/08*
U.S. Cl. 138—130 **2 Claims**

1. A wire reinforced hose having a cylindrical core, a layer of bond stock on the outer surface of said core, reinforcing plies helically wound in alternate angular disposition on said cylindrical core with sufficient tension to at least partially

penetrate the layer of bond stock, and a cylindrical elastomer jacket encircling the resultant reinforced core, said reinforced core and said jacket being vulcanized into an integral structure, the improvement comprising:

said cylindrical core consisting of a two-layer laminate having a single fabric layer and a single elastomer layer, said laminate being disposed in said cylindrical core in a spiral overlapping relationship with sufficient lap that the resultant cylindrical core has at least two fabric layers and two elastomer layers concentrically disposed therein, with one of such fabric layers forming the outer surface of the core and one of such elastomer layers forming the inner surface of the cylindrical core; and



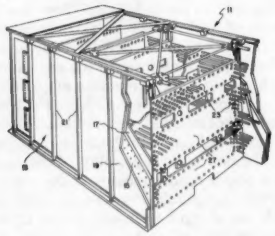
said layer of bond stock being positioned about the outer surface of fabric of said cylindrical core to bond the reinforcing plies to the outer surface of said cylindrical core.

4,262,705

INTERNAL SUPPORT STRUCTURE FOR HEAT EXCHANGER

David R. Skinner, Georgetown; Lawrence L. Bethel, Boston, and Ralph S. Clemens, Georgetown, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 14, 1979, Ser. No. 38,659
Int. Cl.³ F16L *59/12*
U.S. Cl. 138—149 **10 Claims**



9. In a rectangular hot gas duct wherein the duct includes spaced apart heat insulated sidewalls in the lengthwise direction interconnected by a pair of heat insulated spaced apart end walls defining a hot gas path; an improved support structure for said duct, the improvement comprising:

a plurality of eye support members aligned and spaced along the length of each opposite sidewall;

a sliding truss mounted in the hot gas path, the sliding truss including a pair of opposite substantially parallel base rails extending lengthwise in the duct, said base rails being slidably mounted through eye support members on adjacent lengthwise sidewalls;

gusset plates each located at an eye support member and connected to a base rail portion at that eye support member; and,

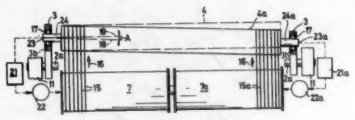
cross members connected at opposite ends to gusset plates whereby the opposite base rails are tied together across the hot exhaust gas duct.

4,262,706

LOOM

Karl Popp, Rüti, and Heinz Schaub, Oberbühren, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 27, 1978, Ser. No. 964,136
Claims priority, application Switzerland, Dec. 2, 1977, 014739/77
Int. Cl.³ D03D *49/06*
U.S. Cl. 139—103 **4 Claims**



1. A loom comprising:

a one part tension roll having a lengthwise axis for producing the tension of warp threads payed-off a warp beam;

a two-part warp beam for delivering the warp threads to the tension roll;

means for mounting said tension roll to be movable transversely with respect to its lengthwise axis;

said mounting means comprising a plurality of bearing means, each end of the tension roll being movable individually and independently of one another so as to enable the tension roll to move into an inclined position;

a respective drive for each of both warp beams; and

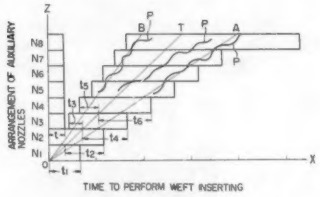
means for individually controlling the drive of each warp beam as a function of each end position of the tension roll.

4,262,707

METHOD FOR INJECTING TRANSPORT FLUID INTO A SHED FROM AUXILIARY JET NOZZLES

Hajime Suzuki, Anjyo, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Feb. 5, 1979, Ser. No. 9,733
Claims priority, application Japan, Feb. 10, 1978, 53/14448
Int. Cl.³ D03D *47/28*
U.S. Cl. 139—435 **5 Claims**



1. In a method for inserting a weft thread through a shed of a jet loom by the steps of launching said weft thread by a fluid jet from a main jet nozzle, thereby initiating insertion of said weft thread through said shed, and successively and sequentially discharging separate fluid jets from respective auxiliary jet nozzles spaced along the full length of the path of said weft thread through said shed, thereby assisting said main jet nozzle in inserting said weft thread through said shed, the improvement comprising:

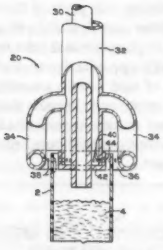
establishing periods of time during which said separate fluid jets are progressively discharged from each said respective auxiliary jet nozzle such that the lengths of said periods of time are sequentially progressively increased in the direction of the weft thread insertion along said path of said weft thread through said shed.

4,262,708

METHOD AND APPARATUS FOR TREATING FLEXIBLE CONTAINERS

Rafael A. de Echeandia, Chester, and James L. Hutcheson, Mechanicsville, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Sep. 14, 1979, Ser. No. 75,801
Int. Cl.[3] B65B *31/06*
U.S. Cl. 141—7 6 Claims



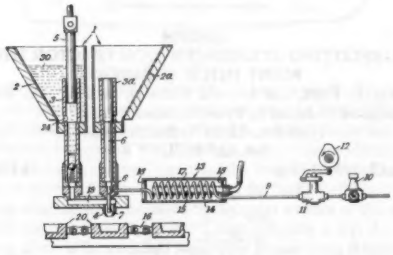
1. A nozzle apparatus for simultaneously cleaning an edge portion of and at least partially removing air from a flexible container comprising an air removal chamber having an opening for directing air removal fluid in a generally vertically downward direction into said flexible container, a first cleaning fluid line, a first cleaning chamber connected in fluid-flow relation to said first cleaning fluid line, said first cleaning chamber having a plurality of openings for directing a cleaning fluid in a generally horizontal direction against the inside edge of said flexible container, a second cleaning chamber having a plurality of openings for directing said cleaning fluid in a generally horizontal direction against the outside edge of said flexible container and at least a second cleaning fluid line contact in fluid-flow relation to said second cleaning chamber and said first cleaning fluid line.

4,262,709

MANUFACTURE OF TOFFEE AND LIKE CONFECTIONERY

Peter A. Mayfield, Hemel Hempstead, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Sep. 20, 1979, Ser. No. 77,479
Int. Cl.[3] A23G *1/20*
U.S. Cl. 141—67 2 Claims



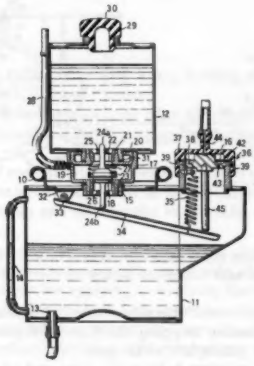
1. A depositor for depositing highly viscous confectionery into moulds, comprising concentric inner and outer nozzles having adjacent lower outlet ends, and conveyor for positioning the moulds in succession beneath the nozzles, a hopper to contain said confectionery disposed above the nozzles, a pump including a plunger arranged to perform alternative discharge and suction strokes and to effect at each discharge stroke positive displacement of a measured quantity of the confectionery from said hopper and through the outer nozzle, and means operative after each discharge stroke of the plunger to pass through the inner nozzle a pulse of heated compressed air to cut off from the confectionery contained in the outer nozzle confectionery which has been discharged from said outer nozzle and thereby enable said discharged confectionery to fall into a mould beneath said nozzles.

4,262,710

OIL SUPPLY MEANS FOR TANKS CONTAINING BLENDED FUEL AND OIL

Kazuhiko Nomura; Toshiyuki Sato; Atsushi Kanda, all of Iwata, and Nobuyuki Kanno, Hamamatsu, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 19, 1979, Ser. No. 31,383
Claims priority, application Japan, Apr. 28, 1978, 53-51704; Jul. 19, 1978, 53-88109
Int. Cl.[3] B65B *3/30*
U.S. Cl. 141—98 2 Claims



1. In combination: a fuel tank having a fill port and a removable closure for said fill port through which fuel can be charged;

an oil tank for containing oil to be blended into fuel contained in said fuel tank said oil tank having an inlet port and an outlet port communicating with a measuring means;

said measuring means comprising a chamber of known volume having an inlet opening adapted to receive a predetermined quantity of oil from said oil tank outlet port and an outlet opening to discharge said predetermined quantity of oil into said fuel tank; valve means for selectively and alternately closing and opening said inlet and outlet openings; and

actuating means for actuating said valve means, contact means connected to said removable closure and contactable with said actuating means, whereby when said removable closure is removed from said fill port, said actuating means moving said valve means to open said outlet opening to release oil from said chamber while closing said inlet opening, and when said removable closure is fastened to said fill port, said actuating means; closing said outlet opening to prevent release of oil and opening said inlet opening to permit said chamber to fill with oil.

4,262,711

MICROPLATE FILLER

Joseph A. Anderson, 3350 Stuart St., Denver, Colo. 80212

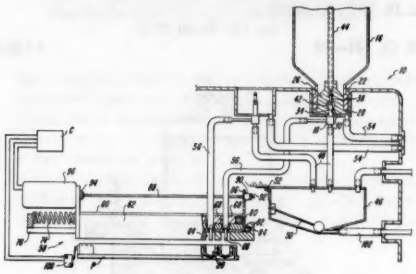
Filed Feb. 13, 1979, Ser. No. 11,877
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—238 23 Claims

1. An apparatus for dispensing liquid into wells formed in a microplate, comprising:

container means for holding the liquid which is to be dispensed into the microplate wells;

a needle valve connected to said container means and including a first tube and a second tube formed together in an integral unit, said first tube to remove the liquid from said container means and said second tube to deliver a pressurizing fluid into said container means so that the removal of liquid therefrom is facilitated;

said first tube surrounds a portion of said second tube while a top portion of said second tube extends outwardly of said first tube so that independent passageways are provided through said first and second tubes such that the liquid is unable to enter said second tube while the pressurizing fluid is unable to enter said first tube under normal operating conditions;



tubing means connected to said first tube for transferring the liquid in said container means to the wells in the microplate;

pinch valve means operably connected to said tubing means for releasably stopping the flow of liquid therethrough into the microplate wells; and

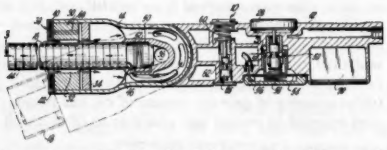
a stopper member held in an open end of said container means and having a channel extending longitudinally therethrough and a passage extending laterally therethrough, said needle valve being inserted into said channel such that said first tube receives liquid entering said passage while said second tube delivers the pressurizing fluid into said channel portion extending beyond said passage.

4,262,712

MAGNETICALLY LATCHABLE LIQUID DISPENSING NOZZLE

Dale A. Young, Bridgewater, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 8, 1978, Ser. No. 958,735
Int. Cl.[3] B65B *31/00*; B67C *3/28*
U.S. Cl. 141—392 **17 Claims**



1. A nozzle assembly for the delivery of liquid from a liquid source to a liquid receiver having a ferromagnetic metal inlet, said nozzle assembly comprising a dispensing nozzle having means for removing vapors which occur during delivery of the liquid to said ferromagnetic metal inlet and including a handle portion pivotally mounted with respect to a forward extending nozzle housing portion having an elongated discharge spout adapted for insertion into said inlet;

vapor collection means operably associated with said spout including a vapor recovery line extending from and through said forward housing portion and said handle portion; and

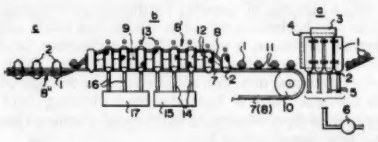
switchable permanent magnet means for producing flux upon activation having an outer suface operably disposed relative to said spout at the end of said nozzle housing portion for releasably holding said nozzle assembly to said ferromagnetic metal inlet being the path of the flux produced by said permanent magnet means being directed in a first direction toward said ferromagnetic metal inlet, means for redirecting the path of flux produced by said magnet means from said first direction when said nozzle assembly is held in place on said inlet to a different second direction generally opposite from said first direction for enabling release of said nozzle assembly from said ferromagnetic metal inlet, and keeper means overlying said permanent magnet means in said nozzle housing portion on the side opposite from said outer surface of said permanent magnet means.

4,262,713

PROCESS FOR CHARGING AND MIXING STANDARD GAS MIXTURE

Masashi Egami, Tokyo, Japan, assignor to Takachiho Chemical Industrial Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1979, Ser. No. 64,407
Claims priority, application Japan, May 1, 1979, 54-53696
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—9 **2 Claims**



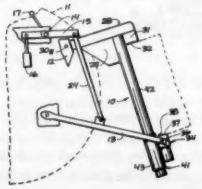
1. In a process for charging gases into a vessel and causing the same to mix into a standard gas mixture to be used for measurement, the improvement comprising the steps of charging calculated amounts of an initial filler gas and then a mixing gas into a treated vessel maintained at a predetermined temperature, the charging of the mixing gas being made through the lower opening of the vessel while the vessel is maintained in an inclined state at least at the time that the mixing gas is introduced, and subsequently inverting the vessel to promote the mixing of the gases.

4,262,714

LOG SPLITTING ATTACHMENT FOR TRACTOR THREE POINT HITCH MEMBERS

George F. Pratt, and Richard Ziehnert, both of Elk, Wash., assignors to James L. Price, Spokane, Wash.

Filed Jun. 18, 1979, Ser. No. 49,625
Int. Cl.[3] B27L *7/00*
U.S. Cl. 144—193 A **12 Claims**



1. A wood splitting attachment for a tractor having three point hitch members with two bottom hitch members being

powered to pivot toward and away from a remaining top hitch member, the attachment comprising:

a cross hitch connector member adapted to pivotally interconnect the two bottom hitch members for pivotal movement therewith;

a top hitch connector member adapted to be pivotably mounted to the top hitch member;

blade means on one of the hitch connector members, having a cutting edge facing the remaining hitch connector member;

a wood support surface on the remaining hitch connector member facing the blade means with the blade means and wood support surface arranged in a prescribed angular relationship and adapted to rigidly engage and brace a piece of wood; and

guide means slidably interconnecting the top hitch connector member and the cross hitch connector member for holding the blade means and wood support surface in the prescribed angular relationship while controlling relative sliding movement of the hitch connector members toward and away from one another in a straight path in direct response to pivotal movement of the bottom hitch members toward and away from the top hitch member.

4,262,715

DECORTICATING DRUM WITH SELECTIVE PROCESSING MODE

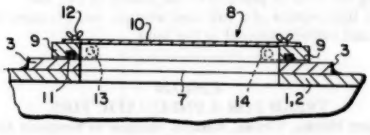
Richard Häusler, and Karl Krebs, both of Graz, Austria, assignors to Maschinenfabrik Andritz Actiengesellschaft, Austria

Filed Nov. 21, 1978, Ser. No. 962,648

Claims priority, application Austria, Nov. 23, 1977, 8369/77

Int. Cl.³ B27L *1/02*

U.S. Cl. 144—208 B **3 Claims**



1. In a decorticating drum with a selective mode of processing, composed of a hollow cylinder adapted to rotate about its longitudinal axis, and being adapted to receive wood fed in at one end and discharge it at the other, in particular a decorticating drum for dry debarking including longitudinal slots at the surface thereof for the elimination of the bark, shell-like cover means adapted to be mounted to the outer surface of the drum in the region of the longitudinal slots whereby a wet decorticating drum is formed, and said cover means being detachable whereby a dry decorticating drum is formed,

the improvement comprising slotted reinforcing ring means secured to said drum surface over the slots in the latter,

a pair of supporting ring means secured to said reinforcing ring means adjacent said slots, groove means in the surface of said supporting ring means facing said reinforcing ring means, O-ring means in said groove means,

and seal means adapted to be connected to said pair of supporting ring means.

4,262,716

VENEER LATHE

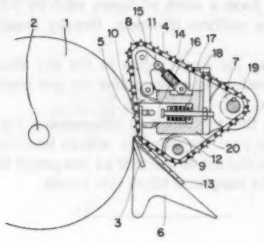
Katsuji Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

Filed Feb. 12, 1979, Ser. No. 11,548

Claims priority, application Japan, Feb. 19, 1978, 53/18324

Int. Cl.³ B27L *5/02*

U.S. Cl. 144—213 **9 Claims**



1. A veneer lathe comprising a log holding means which rotatably supports a log at its ends;

a tangential knife having a knife edge adapted to contact the log surface and cut the log to peel off veneer as the log rotates;

a plurality of endless chain members provided along the log at spaced intervals, a portion of each endless chain member contacting and moving the log closely ahead of the knife edge;

a chain drive motor for driving said endless chain members;

a plurality of projections on the outer side of said endless chain members for applying a revolving force to said log once said projections have been thrust into the log surface;

pressure wheels bearing against the inner side of said endless chain members, thrusting said projections into the log surface;

a plurality of log pressure means, each having an adjusting bar, arranged between said endless chain members closely ahead of the knife edge to press the log surface; and

a transport mechanism for moving the assembly of said knife, endless chain members, pressure wheels, and said log pressure means toward the log correspondingly to the rotation of the log.

4,262,717

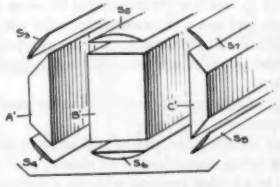
CONVERSION OF BALSA LOGS INTO PANELS

Jean Kohn, New York, N.Y., assignor to Baltek Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 50,699, Jun. 21, 1979. This application Sep. 21, 1979, Ser. No. 77,617

Int. Cl.³ B27D *1/00*; B27F *7/00*

U.S. Cl. 144—316 **11 Claims**



1. A high-yield technique for converting logs of small diameter into large rectangular panels, said technique comprising the steps of:

A. longitudinally cutting each log into raw pieces, all of whose broad faces lie in a plane parallel to a tangent to the

curvature of the log, the cuts being spaced to produce a pair of opposing side pieces having like thicknesses and at least one center piece;

B. faceting the uncut surfaces of the side pieces to provide stock pieces having a trapezoidal cross section;

C. faceting the uncut surfaces of the center piece to produce a stock piece having a rectangular cross section;

D. fitting together said stock pieces in a complementary manner to form a stack of layers each of which has a substantially uniform thickness, thereby creating a dry block;

E. wet-coating the stock pieces in the dry block with a curable adhesive and reassembling the wet pieces to form a wet block;

F. subjecting the wet block to compression for a period sufficient to cure the adhesive and to interlaminate the stock pieces thereof to produce an integrated block; and

G. dividing the integrated block into panels.

4,262,718

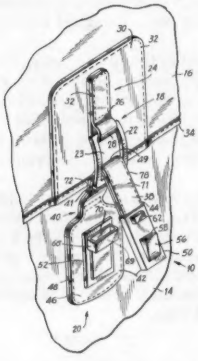
LUGGAGE CLOSURE

Theodore S. Stark, Montclair, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.

Filed Mar. 19, 1979, Ser. No. 21,501

Int. Cl.[3] **A45C** *13/10;* **A44B** *11/00*

U.S. Cl. 150—42 **5 Claims**



1. A closure for a bag, said bag including a wall having an upper edge, an opening adjacent said wall, and a flap having a front edge, said flap being movable to a closed position wherein said flap overlies said opening and a portion of said flap adjacent said front edge overlies a portion of said wall adjacent said upper edge, said closure comprising:

a link having a thru-opening; means for hingeably securing said link to said flap for movement between a first position wherein said link is substantially parallel with said flap and substantially all of said thru-opening overlies said flap, and a second position wherein said link extends away from said flap,

a strap proportioned in cross-section to pass through said thru-opening;

means for securing one end of said strap to said wall;

said strap being comprised of an elastic, semi-rigid material biased to a folded position wherein a portion of said strap on one side of the bight of said fold overlies a portion of said strap on the other side of said bight, said strap being moveable to a closed position wherein said strap portion between the free end of said strap and the bight thereof extends through said thru-opening, said link is in said first position, and said strap is in said folded position.

4,262,719

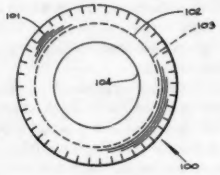
TIRE LINER AND METHOD OF PREPARATION

Donald R. Price, Lansing, Mich., assignor to Harold Harry Vischer, Brooklyn; Harold Harrison Vischer, Jr.; Michael Louis Vischer, both of Jackson; Ian Campbell McLeod, Lansing and Charles Edward Sherry, Holt, all of, Mich.

A part interest Filed Jun. 25, 1979, Ser. No. 51,720

Int. Cl.[3] **B60C** *17/00*

U.S. Cl. 152—158 **12 Claims**



1. In an annular shaped tire liner adapted to fit around and in contact with the inside of a casing which is part of a pneumatic tire and around and in contact with the outside of an inner tube for the tire so as to be between the inner tube and the casing without being attached to reduce the frequency of flat tires wherein the casing has a generally U-shaped surface inside and wherein the tire has spaced apart annular sidewalls supporting a tread the improvement which comprises:

(a) an annular strip of rubber defining an annular length which conforms to the shape of the U-shaped surface of the tire casing opposite the tread in compression in the casing, wherein the strip includes a high temperature and pressure molded and vulcanized rubber section along the length and has a width between two opposite sides and a thickness along the length which provides for substantial protection against and resistance to penetration of the inside casing by a foreign object and having at least one joint across the width of the high temperature and pressure rubber section of the strip, wherein the width of the high temperature and pressure rubber section between the sides is bent into the U-shape of the casing adjacent the tread when positioned in the casing by the inner tube and tends to straighten when outside of the casing thus holding the liner in position in the casing in use; and

(b) a thin section of a low temperature and pressure vulcanized rubber material in the joint.

4,262,720

TREAD FOR A PNEUMATIC TIRE

Wolfgang Hanke, Vienna, Austria, assignor to Semperit Aktiengesellschaft, Vienna, Austria

Filed May 14, 1979, Ser. No. 38,454

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 11501

Int. Cl.[3] **B60C** *11/00, 11/08*

U.S. Cl. 152—209 D **4 Claims**

1. A tread for a pneumatic tire comprising:

two inner ribs extending in the circumferential direction of the tire;

a respective row of blocks extending in the circumferential direction of the tire and arranged laterally outwardly of the two inner ribs;

respective zig-zag configured circumferential grooves for separating said rows of blocks and ribs from one another;

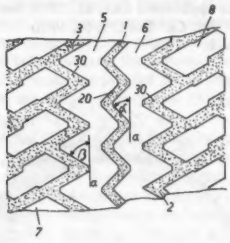
said respective zig-zag circumferential grooves consisting essentially of an intermediate circumferential groove and two lateral circumferential grooves, each of which is arranged to one respective side of said intermediate circumferential groove and at the central region of such tire;

each of said circumferential grooves having legs;

said legs of the intermediate circumferential groove enclos-

ing, with respect to the circumferential direction of the tire, an angle in the order of about 30° to 50°;

the legs of the lateral circumferential grooves enclosing,



with respect to the circumferential direction of the tire, an angle in the order of about 55° to 65°; and

said lateral circumferential grooves each being wider than the width of the intermediate circumferential groove.

4,262,721

PNEUMATIC AIRCRAFT TIRE WITH RADIALLY VARYING TREAD CONTOUR

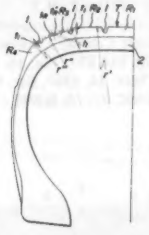
Yukio Tadokoro, Higashiyamato, and Kenji Matsumoto, Kodaira, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1979, Ser. No. 61,782

Claims priority, application Japan, Aug. 4, 1978, 53-94489

Int. Cl.³ B60C *11/06*

U.S. Cl. 152—209 R **5 Claims**



1. In a pneumatic tire for large aircraft comprising a tread, a plurality of main grooves formed on said tread and extending substantially in the circumferential direction of the tire, and circumferential ribs spaced apart from each other by said main grooves, the improvement characterized in that an outer contour of an outermost rib among those ribs which come into contact with ground under load is made substantially discontinuous with respect to an outer contour of each of ribs adjoining the inside and outside of said outermost rib in the widthwise direction of the tire and, said outer contour of said outermost rib is located inside an outer surface defined by the outer contours of said each adjoining rib in the radial direction of the tire, whereby a distribution of heat generating temperature of said tread is made uniform during the high speed running of the tire.

4,262,722

RADIAL TIRE FOR HEAVY LOAD VEHICLES

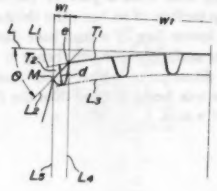
Hiroyoshi Takigawa, Kodaira; Nobuhiro Miyamura, Higashimurayama; Hiroshi Ogawa, Kodaira, and Shinichiro Ohkuni, Tokyo, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,715

Claims priority, application Japan, Oct. 17, 1978, 53-126853

Int. Cl.³ B60C *11/12*

U.S. Cl. 152—209 R **3 Claims**



1. In a radial tire for heavy load vehicles constructed to effectively suppress wandering phenomenon having a pair of annular bead bundles, a radial carcass toroidally extending across said bead bundles, and a tread portion including a reinforcing belt superimposed about said radial carcass, said tread portion having an outer contour composed of a relatively transversely flat main region exclusively adapted to make contact with ground when the tire runs normally and a conical region located at both end edges of said main region and inclined at an given angle of 30°–60° with respect to a tangent drawn from the tread in parallel with the rotary axis of the tire, the improvement comprising; a number of thin incisions extending across said conical region and having inner ends each located on at least the outer surface of the tread at a portion not reaching the inside of said main region, said incisions being circumferentially spaced apart from each other by a distance which is within a range between 1% and 5% of the width of the main region of the tread portion, said conical region having a width measured in a direction parallel to the rotary axis of the tire and lying within a range between 2% and 7% of the width of said main region and said incisions having a gap within a range between 0.3 mm and 1 mm.

4,262,723

REMOVABLE, NON-SKID TIRE FITTING

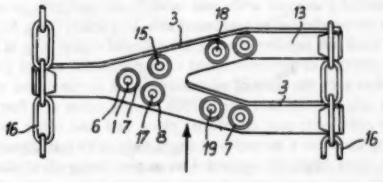
Alain J. M. Bourcier de Caron de Previnquieres, 6, Blvd. Victor Hugo, 06 000 Nice, France

Filed Nov. 20, 1978, Ser. No. 962,157

Claims priority, application France, Nov. 21, 1977, 77 35964; Jun. 5, 1978, 78 17695; Jun. 29, 1978, 78 20114

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—222 **13 Claims**



1. A removable, non-skid fitting for a tire comprising:

a shoe of flexible plastic material, said shoe formed with a sole portion having a lower surface which is to be placed adjacent the tire and having an upper surface, the distance

between said upper and lower surfaces being in the range of from about 5 mm to about 6 mm,

a plurality of bosses on said shoe extending from said upper surface of said sole,

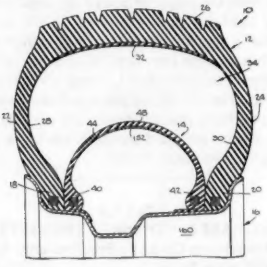
a stud for a said boss, each of said studs having a substantially circular base flange with a diameter in the range of from about 12 mm to about 14 mm with rounded edges and a generally cylindrical extending shaft with a length of from about 4 mm to about 6 mm, said base flange and a part of the extending shaft of a stud being held within a corresponding boss with a part of the shaft extending above the top surface of its boss, the thickness of the sole between the lower face of a stud base flange lower face and the lower surface of the sole being at least about 3.5 mm and the diameter of a boss at its base on the upper surface of the sole being greater than the diameter of the base flange of a stud.

4,262,724

LOW PRESSURE AND RUN-FLAT WARNING SYSTEM FOR A PNEUMATIC TIRE

Berge Sarkissian, Southington, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed May 3, 1979, Ser. No. 36,611
Int. Cl.³ B60C *17/00*
U.S. Cl. 152—330 RF **27 Claims**



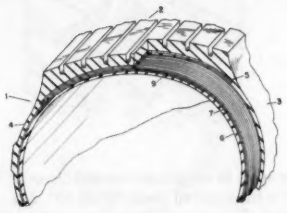
1. A pneumatic insert for a pneumatic tire wherein the tire and insert are arranged to be supported on a wheel rim having an axis of rotation and an annular support surface, said insert comprising a generally toroidal-shaped hollow member with a pair of sidewall portions and a crown portion joining the sidewall portions, said insert further including an axis of rotation substantially coaxial with said wheel axis and an equatorial plane perpendicular to said insert axis, said insert being formed of at least one annular ply of cord material comprising at least two sections of predetermined circumferential extent joined together such that one of said sections is a continuation of the other said section, said one section having cords at a first bias angle only with said equatorial plane and said other section having cords at a second bias angle only with said equatorial plane, said first and second bias angles being dissimilar to furnish said insert crown with an out-of-round condition wherein the radial distance from the wheel axis to the insert crown at said one section is unequal to the radial distance from the wheel axis to the insert crown at said other section, said inequality being governed by the difference in bias angle of the cords in the first and second insert ply sections.

4,262,725

POLYESTER INSERTS IN SINGLE-PLY RADIAL TIRES

Bruce L. Rodenkirch, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 835,383, Sep. 21, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,476
Int. Cl.³ B60C *9/08, 9/20*
U.S. Cl. 152—354 R **3 Claims**



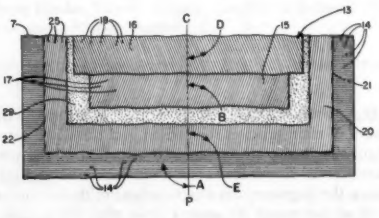
1. In a radial pneumatic tire having a sidewall reinforcement consisting of a single one-piece ply of radial cord reinforcement extending from bead to bead selected from the class consisting of glass and aramid having an initial modulus greater than 200 GPD/100% embedded in an elastomeric matrix, an inner liner contiguous to said ply, and a cincture belt reinforcing the tread portion of the tire, the improvement comprising a circumferential insert sheet positioned between the inner liner and the ply and formed of a material having a break strength reduction of not more than 35% after 10.8 megacycles using Goodrich Disk fatigue test method, embedded in an elastomeric matrix and disposed under the radial center line around the tire between the radial ply and the inner liner, the insert having an axial width less than the axial width of the cincture belt, the insert sheet consisting essentially of reinforcing cords oriented in the same direction as the radial reinforcing cords of the one-piece ply.

4,262,726

RADIAL TIRE WITH A LOW ANGLE CARCASS OVERLAY PLY

Thomas N. H. Welter, Keispelt, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 916,270, Jun. 16, 1978, abandoned. This application Mar. 14, 1980, Ser. No. 130,541
Int. Cl.³ B60C *19/18;* **B29H** *17/14*
U.S. Cl. 152—361 R **13 Claims**



1. A tire comprising:

(a) at least one carcass ply reinforced with cords which are radially oriented between beads of the tire;

(b) a tread and pair of sidewalls surrounding the carcass ply and terminating at a pair of annular, inextensible beads;

(c) a belt structure interposed between the tread and carcass ply for annularly reinforcing the tire, the belt structure comprising a pair of belt plies in superimposed relation, each of the belt plies being reinforced by parallel cords

disposed at angles greater than 15 degrees relative to a plane containing the midcircumferential centerline of the tread, the reinforcement cords of the plies being substantially inextensible in all conditions of the tire and extending in different directions from said plane;

(d) a carcass overlay disposed between the carcass ply and belt structure, the carcass overlay consisting of a single ply with opposing marginal edges which extend laterally beyond the belt structure, the carcass overlay being reinforced with continuous parallel cords which are disposed at angles in the range of from 0 to 13 degrees relative to said plane; and

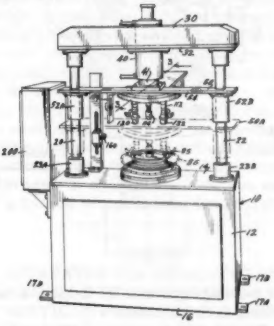
(e) said tire being manufactured by applying said beads and wrapping said carcass ply and said carcass overlay on a generally cylindrical tire building drum, removing said tire from said cylindrical tire building drum, shaping said tire to a toroidal configuration and elongating said reinforcement cords, applying said belt structure and said tread over said carcass overlay and thereafter molding and vulcanizing said tire, said reinforcement cords of said carcass overlay being substantially inextensible after the tire is toroidally shaped, and being elongatable in corresponding relation to the blow-up ratio of the tire when the carcass and attached overlay and cylindrically shaped prior to toroidal expansion and application of said belt structure and said tread.

4,262,727

AUTOMATIC TIRE MOUNTING AND DEMOUNTING MACHINE

Richard E. Schifferly, 9717 Waterville-Npls Rd., Waterville, Ohio 43566

Filed Jan. 8, 1979, Ser. No. 2,030
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—1.24 **5 Claims**



1. A tire mounting machine for mounting a flexible tire on a tire rim comprising in combination:

(a) a base member adapted to rest on the floor;

(b) vertical support members extending vertically upwardly through said base member;

(c) vertically reciprocating means with an upper and lower side on said vertical support members adapted to reciprocate up and down on said vertical support members;

(d) tire mounting arms, each with a vertical central axis, affixed on the underside of said reciprocating means, said tire mounting arms being mounted slidably in circular track members to said underside for arcuate movement of each tire mounting arm;

(e) tire mounting rollers rotatedly mounted for co-axial movement about the vertical central axis of said tire mounting arms, each said roller member having plurality of shoulder members of variable diameter thereon;

(f) means on said base member for receiving and holding a tire rim for the tire mounting process;

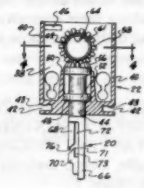
(g) means to actuate said tire mounting arms for the installation of a tire on a tire rim.

4,262,728

VERTICAL BLIND

Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Continuation-in-part of Ser. No. 921,048, Jun. 30, 1978. This application Jan. 10, 1979, Ser. No. 2,457
Int. Cl.³ E06B *9/30*
U.S. Cl. 160—168 R **32 Claims**



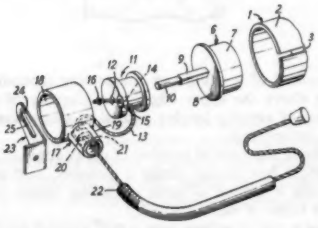
1. A vertical blind, comprising: a blind head, a plurality of carriers supported for reciprocating movement in said head, a plurality of holder means respectively supported in said carriers for pivotal movement and respectively adapted to support a plurality of vanes therefrom, and control means for controlling said reciprocating movement of said carriers and for controlling said pivotal movement of said holder means, said control means including rod means rotatably supported in said head, means for rotating said rod means comprising a first gear, means for connecting said first gear to said rod means, worm gear means rotatably supported in said blind head about an axis extending in a plane parallel to the plane passing through the axis of rotation of said rod means and perpendicular to said axis of rotation, said worm gearm means comprising a worm for meshing engagement with said first gear, and means for rotating said worm gear means about its axis, whereby rotation of said rod means by said rotating means will rotate said holder means.

4,262,729

ROLLER BLINDS

Enar S. Von Knorring, 77020 Söderbarke, Sweden

Continuation-in-part of Ser. No. 858,212, Dec. 7, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,088
Int. Cl.³ E06B *9/20*; A47H *1/00*
U.S. Cl. 160—242 **5 Claims**



1. A roller blind comprising:

(i) a roller, to receive a screen, having a respective trunnion extending axially from each end of said roller,

(ii) a screen having an end thereof secured to said roller,

(iii) a pair of brackets for mounting on a support structure, each bracket including an arm with an elongated slot therein, the brackets each being such that when they are mounted on the supporting structure the slot extends in

the direction towards and away from the supporting structure, the slot of each bracket arm receiving a respective one of the trunnions,

(iv) a flanged pulley mounted on one of said trunnions and keyed for rotation therewith,

(v) an open-ended sleeve disposed about and spaced radially from said pulley, said sleeve including a radial opening,

(vi) a cord secured at one of its ends to said flanged pulley and passed through said radial opening of the sleeve,

(vii) means for connecting said sleeve to the supporting structure such that the sleeve may not rotate about the axis of the trunnion but may travel towards and away from the supporting structure to the extent required by movement of the trunnions along their respective slots during winding and unwinding of the screen on the roller.

4,262,730

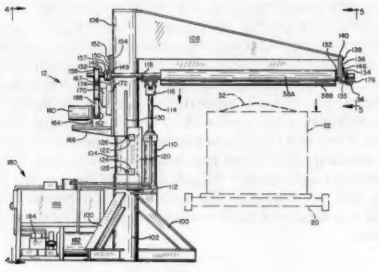
STRIKE OFF METHOD FOR AUTOMATICALLY LEVELING AND COMPACTING SAND IN MOLD BOXES OF VARYING HEIGHTS

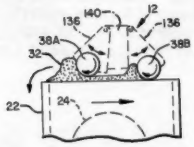
Earl W. Powers, Molalla, Oreg., assignor to Dependable-Fordath, Inc., Sherwood, Oreg.

Continuation of Ser. No. 967,110, Dec. 6, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,510

Int. Cl.³ B22C *15/02, 11/02*

U.S. Cl. 164—4 **1 Claim**





1. A method of leveling and compacting mounds of sand extending above the upper edges of a plurality of open-top mold boxes of varying heights carried in succession along a pathway, comprising:

determining the vertical position of upper edges of an open-top mold box carried along a pathway, said mold box carrying a mound of sand extending higher than said upper edges of said mold box;

lowering a pair of rollers from a first vertical position substantially above said mound of sand in said mold box to a second vertical position adjacent said determined vertical position of said upper edges of said mold box, said pair of rollers comprising first and second rollers whose axes extend transversely of the direction of travel of said mold box along said pathway, said rollers each having a length greater than the width of said mold box, said rollers being pivotally supported wherein they can swing toward and away from said mold box, said first roller being positioned higher than said second roller, said rollers being adapted to rotate whereby their lower peripheries move in a direction opposite to the direction of travel of said mold box along said pathway, said rollers being biased toward said mold box, said second vertical position being one wherein the lower periphery of said first roller is above said upper edges of said mold box and the lower periphery of said second roller is below said upper edges of said mold box;

passing said mold box along said pathway beneath said rollers whereby said first roller levels and compacts said mound of sand to a height above said upper edges of said mold box and said second roller contacts the front of said mold box, swings upwardly and rides along said upper edges of said mold box further to compact said mound of sand and impart a smooth horizontal surface thereto, said surface coinciding with said upper edges of said mold box; and

raising said pair of rollers to said first vertical position after said mold box has passed therebeneath.

4,262,731

FOUNDRY MOLDING-APPARATUS AND METHOD

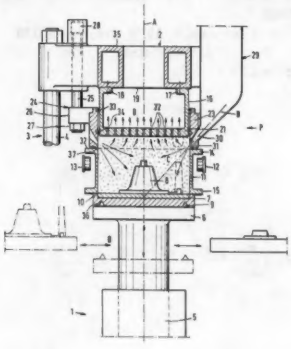
Friedrich Wetzel, Allmersbach, Fed. Rep. of Germany, assignor to A. Stotz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,075

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814140

Int. Cl.³ B22D *15/22*

U.S. Cl. 164—19 **16 Claims**



1. A foundry molding-apparatus for forming a mold from a pattern, comprising in combination:

a mold head fixed to said apparatus, said mold head including a perforated press plate and having a longitudinal axis;

a walled sand frame coaxially arranged around said mold head and movable relative thereto, said walls of said sand frame including inlet means for passing mold sand therethrough, the cross-sectional opening of said inlet means being located below air discharge and extending transversely to the longitudinal axis;

a mold box movable relative to and along the axis of said mold head and adapted to support said sand frame shiftable in height;

a pattern plate for carrying a pattern and supporting said mold box, said pattern plate being movable relative to and along the longitudinal axis of said mold head;

at least one molding sand delivery means operatively connected to said sand frame for supplying molding sand to said sand inlet means; and

means for independently moving said sand frame and said at least one delivery means relative to said mold head.

16. In a method of supplying and compacting of mold sand in foundry molding apparatus providing a mold chamber

which is defined by a mold head, a sand frame, a mold box, and a pattern plate the steps in combination therewith comprising

axially displacing at least the sand frame along a longitudinal axis relative to the mold head to adjust the volume of the chamber;

supplying mold sand to the mold chamber in a direction transverse to the axis in such a way that air contained in the mold chamber and in the mold sand leaves the chamber in a direction substantially parallel to the longitudinal axis in the direction away from the pattern plate; and

compacting the mold sand.

4,262,732

APPARATUS AND PROCESS RELATING TO MANUFACTURING OF A FILAMENT DIRECTLY FROM A MOLTEN MATERIAL

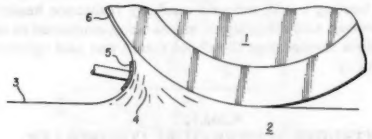
Pierre Ramoni, Hauterive; Luc Espic, and Wilfried Kurz, both of Lausanne, all of Switzerland, assignors to Nivarox S. A., Switzerland

Filed Jul. 17, 1979, Ser. No. 58,204

Claims priority, application Switzerland, Jul. 20, 1978, 7821/78

Int. Cl.³ B22D *11/06, 11/16*

U.S. Cl. 164—87 **10 Claims**



1. An improvement of the process for fabricating a filament which emerges directly from a molten material, wherein the molten material is provided as a molten material bath and a disc having a crown surface is partially submerged in said molten material, said disc rotating around a fixed axis and entraining a quantity of the material in the crown of the surface of the disc and ejecting said quantity by centrifugal force, said quantity including a meniscus portion formed between the crown of the surface of the rotating disc and the surface of the melt, wherein the improvement comprises placing a body in contact with the meniscus between to stabilize the meniscus and assure the location of a take-off of the filament from the disc.

4,262,733

APPARATUS FOR REMOVING AND SIMULTANEOUSLY TURNING CUT-TO-LENGTH HOT STRAND SECTIONS FROM THE DELIVERY ROLLER TABLES OF A MULTISTRAND CONTINUOUS CASTING INSTALLATION

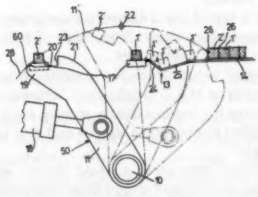
Adalbert Röhrig, Wädenswil, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Mar. 21, 1980, Ser. No. 132,655

Claims priority, application Switzerland, Apr. 6, 1979, 3264/79

Int. Cl.³ B22D *11/126*

U.S. Cl. 164—412 **8 Claims**



1. An apparatus for the removal and simultaneous turning of cut-to-length hot strand sections from run-out roller tables of a multistrand continuous casting installation for metals, especially steel, and for the deposition of the removed strand sections upon a laterally arranged cooling bed, with the aid of pivotal lever means provided with receiver means for the strand sections, the improvement comprising:

means defining an axis of rotation for said pivotal lever means;

said receiver means of said pivotal lever means containing support surfaces enclosing an angle with one another and serving to receive a strand section located farthest from the cooling bed:

said means defining said axis of rotation being located below the level of the cooling bed approximately at the center between the cooling bed and the roller table located farthest from said cooling bed;

said pivotal lever means including lever flank means confronting said cooling bed for displacement of a neighboring strand section;

said lever flank means having a substantially arcuate-shaped configuration; and

the run-out roller table situated closest to the cooling bed being provided with a partially descending slide means which merges with said cooling bed.

4,262,734

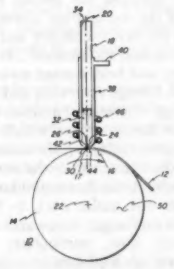
APPARATUS FOR MELT PUDDLE CONTROL AND QUENCH RATE IMPROVEMENT IN MELT-SPINNING OF METALLIC RIBBONS

Howard H. Liebermann, Gloversville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,363

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—423 **10 Claims**



1. An improvement in apparatus for making metallic alloy ribbon comprising a melt ejection crucible including a reservoir for molten alloy meterial to be cast and a nozzle for casting the melt, and first gas inlet means for pressurizing the reservoir to eject said melt onto a moving substrate surface, the improvement comprising

a confluent bearing gas sleeve encompassing at least the lower portion of, and coaxially aligned with, said melt ejection crucible,

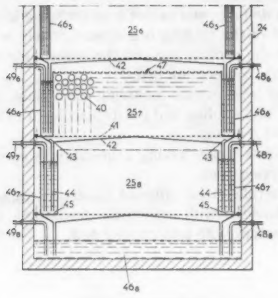
a second gas inlet means for supplying a confluent bearing gas to said confluent bearing gas sleeve, and

an outlet orifice in said confluent bearing gas sleeve for directing the flowing bearing gas as a gas stream about a molten alloy stream, the melt puddle formed on said moving substrate surface, and the edge surfaces of the metallic alloy ribbon formed from said puddle.

4,262,735
INSTALLATION FOR STORING AND RECOVERING HEAT ENERGY, PARTICULARLY FOR A SOLAR POWER STATION

Philippe Courrege; Jean Deflandre, and Francois Valette, all of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, France

Filed Jun. 8, 1978, Ser. No. 913,814
Claims priority, application France, Jun. 10, 1977, 77 17850
Int. Cl.[3] F28D *17/00*
U.S. Cl. 165—4 25 Claims



1. An installation for storing and recovering heat energy, particularly for a solar power station, comprising: a first exchanger, associated with a heat source, in which a circulating heat-carrying fluid or thermofluid may undergo a temperature increase; a second exchanger in which said thermofluid may yield heat to a user unit; a first circuit connecting the outlet of the first exchanger to the inlet of the second; a second circuit connecting the outlet of the second exchanger to the inlet of the first; a storage reservoir containing a heat storage material capable of storing heat, connected both to the first circuit and to the second; and distributing means for automatically effecting a given distribution of either the thermofluid coming from the first exchanger between the second exchanger and the storage reservoir, or the thermofluid coming from the second exchanger between the first exchanger and said reservoir;

means for streaming said thermofluid over the walls of containers enclosing said heat storage material and which are disposed in said storage reservoir; and

wherein said storage reservoir comprises several superposed compartments or levels, each of which is provided with a thermofluid reserve collecting the thermofluid which has streamed over the containers of the compartment considered and from which, the thermofluid may either be taken through at least one outlet duct, to be directed either towards the first exchanger or towards the second, or this thermofluid may flow, particularly by overflowing, towards the level situated immediately below the level considered, by streaming over the containers of heat storage material of said level situated below.

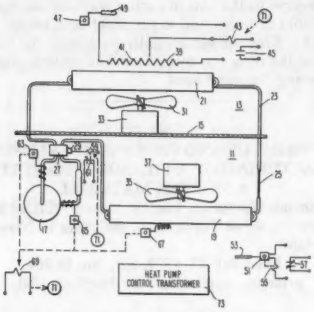
4,262,736
APPARATUS FOR HEAT PUMP MALFUNCTION DETECTION

Robert F. Gilkeson, 1084 Broadview Rd., Wayne, Pa. 19087, and George C. Wiedersum, 710 Crum Creek Rd., Broomall, Pa. 19008

Filed Oct. 18, 1979, Ser. No. 86,167
Int. Cl.[3] F28F *27/00*
U.S. Cl. 165—11 R 9 Claims

1. A malfunction detector circuit for a heat pump system having operation circuitry including a low-voltage transformer, a reversing valve for establishing heating and cooling modes, and having an auxiliary resistance heater as an integral part thereof, said circuit detecting a degradation in said heat pump performance resulting in premature resistance heater operation, comprising:

means for establishing an outdoor temperature threshold above which said resistance heater operation should not be needed; and

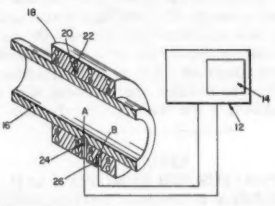


means for providing an alarm signal when said outdoor temperature is above said threshold, said heat pump is in the heating mode and said auxiliary resistance heater is operating, said alarm signal means being connected to said outdoor temperature threshold means and said operation circuitry.

4,262,737
EXTRUDER TEMPERATURE CONTROLLER

Louie M. Faillace, Pawcatuck, Conn., assignor to Crompton & Knowles Corporation, Parsippany, N.J.

Filed Jun. 15, 1979, Ser. No. 48,974
Int. Cl.[3] F28F *27/02*
U.S. Cl. 165—12 12 Claims



1. An extruder system having

a barrel

a shell surrounding said barrel and having heat exchange elements

heat exchange element power means,

at least one pair of temperature sensitive elements, one of said pair being placed to sense the temperature adjacent the inner surface of said barrel, the other of said pair being placed to sense the temperature of said shell, and

a controller having

temperature signal input means for receiving an independent temperature signal from each of said pair of temperature sensitive elements,

setpoint signal input means for inputting a setpoint signal representative of a desired barrel temperature setpoint,

storage means for independently storing each of said input independent temperature signals and said input setpoint signal, and

control means responsive to said stored input setpoint signal and each of said stored input independent temperature signals to derive output signals,

said heat exchange element power means being responsive

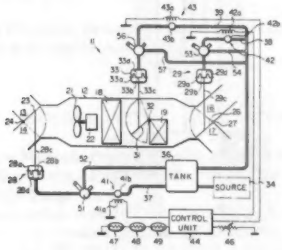
to said output signals automatically to maintain the temperature of said barrel close to said input setpoint temperature.

4,262,738

AIR CONDITIONING APPARATUS FOR VEHICLE

Nobuhiro Kato, Saitama, and Masami Ohtani, Higashimatsuyama, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,637
Claims priority, application Japan, Mar. 18, 1978, 53-31427; Mar. 18, 1978, 53-31428
Int. Cl.³ F25B 29/00
U.S. Cl. 165—25 4 Claims



1. An air conditioning apparatus having an air flow duct, a movable damper for controlling air flow through the duct, a heater core for heating the air in the duct, an evaporator for cooling the air in the duct, an actuator for positioning the damper in accordance with fluid pressure applied to the actuator, a fluid pressure source and a fluid pressure modulator for modulating fluid pressure from the source, the combination therewith comprising valve means for selectively connecting the actuator to the modulator, the source or the atmosphere;

sensor means for sensing a temperature inside the passenger compartment, the modulator modulating the fluid pressure in accordance with an output of the sensor means;

control means connected to the sensor means and temperature setting means for setting a desired temperature into the control means, the control means controlling the modulator to modulate the fluid pressure in such a manner that the temperature inside the passenger compartment equals the desired temperature;

the valve means being controlled by the temperature setting means;

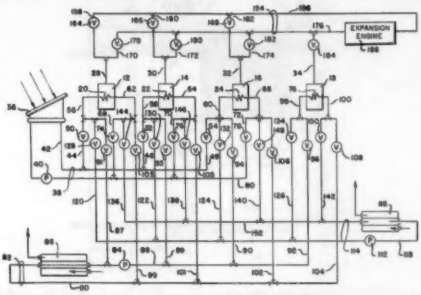
the temperature setting means comprising a movable member which is movable from a minimum temperature setting through an automatic temperature control range to a maximum temperature setting, the valve means being controlled by the movable member to connect the actuator to one of the source or the atmosphere when the movable member is at the minimum temperature setting, to the modulator when the movable member is in the automatic temperature control range and to the other of the source or the atmosphere when the movable member is at the maximum temperature setting.

4,262,739

SYSTEM FOR THERMAL ENERGY STORAGE, SPACE HEATING AND COOLING AND POWER CONVERSION

Dieter M. Gruen, Downers Grove, and Paul R. Fields, Chicago, both of Ill., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Continuation of Ser. No. 773,363, Mar. 1, 1977, abandoned. This application Jan. 3, 1979, Ser. No. 741
Int. Cl.³ F28D 15/00
U.S. Cl. 165—485 7 Claims



1. A method of space cooling comprising:

heating a first body of a first hydride having a decomposition pressure of from about 8 to 12 atmospheres at 100° to 130° C. and 0.1 to 0.5 atmospheres at 30° to 50° C. to a temperature of 100° to 130° C. hereby the hydride decomposes to a first hydridable material and hydrogen,

absorbing the hydrogen on a first body of hydridable material to form a second hydride having a decomposition pressure of about 20 to 50 atmosphere at 100° to 130° C. and 1 to 7 atmospheres at 10° to 50° C. while maintaining the bed at a temperature below the decomposition temperature of said second hydride at the pressure obtaining by rejecting the heat to the outside ambient,

simultaneously space cooling by utilizing the ambient heat of the space to be cooled to heat a second body of said second hydride to decomposition temperature whereby the hydride decomposes to a second hydridable material and hydrogen,

absorbing the hydrogen on a second body of hydridable material to form said first hydride by maintaining the bed at a temperature below the decomposition temperature of said first hydride at the pressure obtaining by rejecting the heat to the outside ambient, and

sequentially continuing the cycle to obtain continuous space cooling.

4,262,740

CASINGS FOR HEAT EXCHANGERS AND BURNER/RECUPERATOR ASSEMBLIES INCORPORATING SUCH CASINGS

Heinz Brune, P.O. Box 3201, Sta. C., Hamilton, Ontario, Canada (L8H 7K6)

Filed Feb. 7, 1979, Ser. No. 10,186
Int. Cl.³ F28F 9/00
U.S. Cl. 165—67 7 Claims

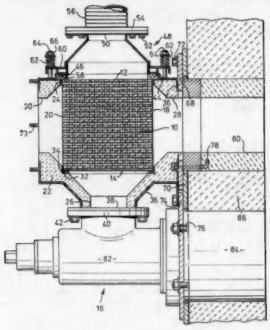
1. A casing for a heat exchanger core which has therein a first plurality of parallel passages extending between two opposite faces of the body and constituting a first fluid flow path having an inlet and an outlet and a second plurality of parallel passages extending between two other opposite faces of the body and constituting a second fluid flow path having an inlet and an outlet and in heat exchange communication with the first path, the casing including:

a hollow casing body having an internal shoulder to be

engaged by a respective face of the core and surrounding a respective fluid path inlet or outlet from the casing body;

a first gasket interposed between the shoulder and the edges of the abutting core face;

a second gasket mounted on the edges of the core face opposite to the said abutting face to seal the join between the said core edges and the casing body;



a gasket compressor member engaging the gasket face of the second gasket opposite to that engaged with the core face edges; and

resilient means operative between the gasket compressor member and the casing body to urge the compressor member toward the core face and thereby compress the gaskets into sealing engagement with the respective core edges and the casing body.

4,262,741

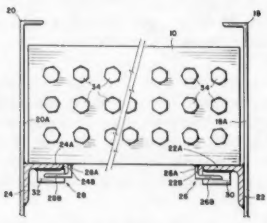
HEADER SUPPORT FOR HEAT EXCHANGER

Robert K. Rothenbucher, 6617 S. 92 E. Ave., Tulsa, Okla. 74133

Filed Jun. 11, 1979, Ser. No. 47,134

Int. Cl.[3] F28F *9/00*; F16L *3/08*

U.S. Cl. 165—68 **1 Claim**



1. Means for supporting a heat exchanger between a pair of spaced apart, paralleled horizontal structural members, each having a vertical portion, the heat exchanger having a header at each end extending transversely of the structural members, the support means comprising:

a bracket affixed at each end of each of the exchanger structural members, each bracket having a horizontal portion and the bracket horizontal portions being in a common horizontal plane, each horizontal portion having an inner edge, the exchanger headers resting on the horizontal portions of the brackets;

a clip member for each of said brackets, each clip member having a vertical portion with a top and bottom end and a horizontal portion, the top end of each vertical portion being affixed to a header adjacent to and inwardly of its said bracket horizontal portion inner edge, and each clip member having a horizontal portion integrally extending from the vertical portion lower end and extending in the direction towards the structural member to which the adjacent horizontal bracket is attached and each clip member horizontal portion extending below, parallel to, spaced from, and in overlapping relationship; and

a stop member affixed to each said bracket horizontal portion adjacent each said clip members limiting the horizontal movement of said clip members.

4,262,742

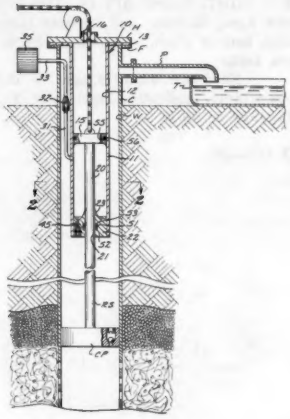
DOWNHOLE SEAL FOR LOW PROFILE OIL WELL PUMPING INSTALLATIONS

Robert G. James, 3509 Janene Way, Bakersfield, Calif. 93306

Filed Aug. 15, 1979, Ser. No. 66,631

Int. Cl.[3] E21B *43/00*

U.S. Cl. 166—68 **4 Claims**



1. A downhole seal assembly conformed for suspension from a well head and adapted to extend into the interior of a well, comprising:

a cylinder including a flange on one end thereof adapted to attach to said well head and conformed to align said cylinder within said well;

a piston slidably received on the interior of said cylinder;

a rod connected to said piston and aligned to extend through said cylinder into said well;

an annular plug inserted in the other end of said cylinder including a central opening conformed to receive said rod;

an aspiration tube connected between said cylinder and atmosphere;

a first check valve inserted in said aspiration tube and aligned to allow the ingestion of air into said cylinder upon the upward translation of said piston; and

a second check valve deployed in said plug and aligned to relieve said cylinder upon the downward translation of said piston.

4,262,743

DIFFUSER FOR WELLHEAD ISOLATION TOOL

Jim B. Surjaatmadja, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 4, 1979, Ser. No. 71,903

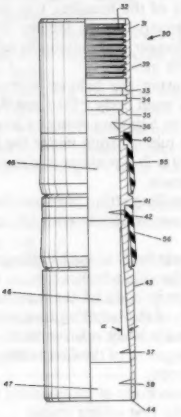
Int. Cl.[3] E21B *33/03*

U.S. Cl. 166—91 **28 Claims**

15. A wellhead isolation tool diffuser for the injection of treatment fluid under pressure into well bore tubing, comprising:

a cylindrical body adapted to receive said fluid under pressure into a bore therethrough which bore directs said fluid into said well bore tubing, said bore having upper, inter-

mediate and lower sections, said upper section comprising a cylindrical passage, said intermediate section comprising



a divergent passage, and said lower section comprising a non-divergent passage.

4,262,744

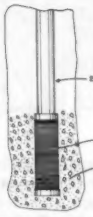
MOLDED FITTINGS AND METHODS OF MANUFACTURE

Andrew Mitchell, Pompano Beach, Fla., and Kermit W. Janssen, Valley Forge, Pa., assignors to Certain-teed Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 31,522, Apr. 19, 1979. This application Dec. 14, 1979, Ser. No. 103,932

Int. Cl.³ B01D *29/10;* **E03B** *3/20;* **E21B** *43/08*

U.S. Cl. 166—227 **13 Claims**



1. A well screen unit comprising a body having a continuous, substantially imperforate skin having an outer surface and an inner surface, a plurality of transverse, spaced compression ribs arranged to extend inwardly from the inner surface of the skin and being formed integrally with the skin, at least one longitudinally extending rib extending from the inner surface of the skin and being formed integrally with the skin, and means disposed at opposite lateral edges of the body defining joining surfaces for joining the body to another similar body.

4,262,745

STEAM STIMULATION PROCESS FOR RECOVERING HEAVY OIL

Norman E. Stewart, Grand Centre, Canada, assignor to Exxon Production Research Company, Houston TX

Filed Dec. 14, 1979, Ser. No. 103,803

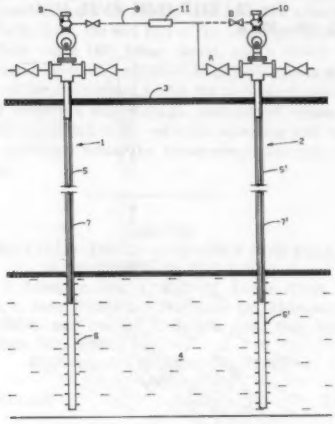
Int. Cl.³ E21B *43/24*

U.S. Cl. 166—263 **12 Claims**

11. A method for recovering viscous hydrocarbons from a subterranean formation penetrated by first and second wells connected at or near the surface by a conduit which comprises:

(a) injecting steam into said formation through said first well and permitting the steam to soak therein;

(b) producing fluids consisting essentially of steam and hot water from the formation through said first well and flowing said fluids directly into said formation via said



conduit and said second well, said second well having been previously used to inject steam into said formation and having substantially ceased producing fluids following a soak period;

(c) injecting an additional amount of steam into said formation via said second well; and

(d) producing fluids including viscous hydrocarbons from said formation through said second well.

4,262,746

VISCOELASTIC POLYMER BANK WITH IMPROVED MOBILITY CONTROL

Robert E. Hammett, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 26, 1978, Ser. No. 973,359

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—273 **4 Claims**

1. In a method of displacing oil through at least a portion of a crude oil containing subterranean reservoir having an injection means and fluid communication through the reservoir with a production means, wherein a hard saline aqueous viscoelastic polymer solution having a divalent cation concentration of at least about 500 mg/l and total dissolved solids of at least about 5000 mg/l is injected into the reservoir at the injection means and is displaced through at least a portion of the reservoir for displacing crude oil towards the production means, wherein the improvement comprises:

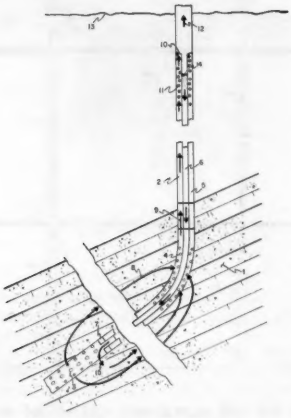
increasing the resistance of said viscoelastic polymer solution to movement through the subterranean reservoir by prehydrating a viscoelastic polyacrylamide in an aqueous fluid having a divalent cation concentration of not greater than about 100 mg/l and mixing the resulting prehydrated viscoelastic polymer with a hard brine having a sufficient divalent cation concentration and a total dissolved solids concentration to provide said hard, saline aqueous viscoelastic polymer solution having a divalent cation concentration of at least 500 mg/l and total dissolved solids of at least about 5000 mg/l.

4,262,747

IN SITU RECOVERY OF GASEOUS HYDROCARBONS AND STEAM

Guy R. B. Elliott, 103 Grand Canyon Dr.; Nicholas E. Vanderborgh, 660 Los Pueblos, both of Los Alamos, N. Mex. 87544, and Milton W. McDaniel, P.O. Box 488, Cimarron, N. Mex. 87714

Filed Feb. 26, 1979, Ser. No. 15,360
Int. Cl.[3] **E21B** *43/00, 43/38, 43/40*
U.S. Cl. 166—305 R **3 Claims**



1. An in situ method of extracting methane and steam from brine under high pressure comprising:

(a) emplacing at least one well pipe into a brine-containing formation,

(b) perforating the well pipe in at least two locations opposite the said formation forming upper and lower perforations,

(c) having a pump in the well pipe near the upper perforations,

(d) circulating the brine through a first section of the said pump thereby reducing its pressure, recovering mechanical energy to assist pumping, controlling the release of the methane and steam to the surface, and

(e) pumping methane-depleted brine into the formation.

4,262,748

REMOTE MULTIPLE STRING WELL COMPLETION

Kerry G. Kirkland, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Aug. 20, 1979, Ser. No. 67,733
Int. Cl.[3] **E21B** *23/00, 33/035*
U.S. Cl. 166—348 **16 Claims**

1. In the completion of a mutiple string underwater well installation of the type comprising a generally tubular support structure located under water above the well bore and including rotational orientation reference means, the improvement comprising

installing in the tubular support structure a multiple string tubing hanger body constructed and arranged to support at least two tubing hanger segments each occupying a predetermined position witin the hanger body,

said step of installing the hanger body being carried out in a manner which locates the hanger body in a predetermined rotational position relative to the rotational orientation reference means;

providing a handling tool having

a main body connected to a handling string,

a tubular body surrounding the main body and extending therebelow, and

locator means carried by the tubular body and operative to coact with the orientation reference means of the support structure;

releasably securing the main body of the handling tool to the tubular body of the handling tool in the same rotational orientation relative to the locator means of the handling tool as the hanger body occupies relative to the orientation reference means;

releasably securing the hanger segment of a first tubing string to the main body of the handling tool;

manipulating the handling string to lower the handling tool and the first tubing string under the locator means of the handling tool is in a position to coact with the orientation reference means;

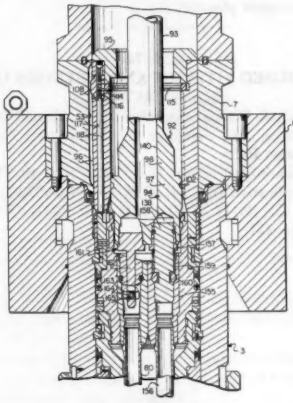
rotating the handling string to rotate the handling tool until the locator means coacts with the orientation reference means;

releasing the main body of the handling tool from the tubular body of the handling tool;

lowering the main body of the handling tool through the tubular body of the handling tool, while preventing rotation of the main body relative to the tubular body, until the hanger segment of the first tubing string has landed in the hanger body;

releasing the main body of the handling tool from the hanger segment of the first tubing string;

retrieving the handling tool;



again releasably securing the main body of the handling tool to the tubular body of the handling tool in said same rotational orientation;

releasably securing the hanger segment of a second tubing string to the main body of the handling tool;

again lowering the handling tool an again rotating the handling tool until the locator means coacts with the orientation reference means;

again releasing the main body of the handling tool from the tubular body of the handling tool and lowering the main body through the tubular body, while preventing rotation of the main body relative to the tubular body, until the hanger segment of the second tubing string has landed in the hanger body;

releasing the hanger segment of the second tubing string from the main body of the handling tool; and

retrieving the handling tool.

7. In a handling tool for remotely installing a device with specific rotational orientation in an underwater well installation of the type having a tubular support structure located under water and provided with rotational orientation reference means disposed above the location at which the device being installed is to be landed, the combination of

a main body adapted to be connected to at least one handling

string in such manner that the at least one handling string can be manipulated to rotate the main body about its central axis, the main body having

a circular outer surface, and

means for connecting to the main body at least one device to be installed, with the connected device depending from the main body;

a tubular body surrounding the main body and equipped with externally exposed locator means constructed and arranged to coact with the rotational orientation reference means of the underwater tubular support means;

releasable means for securing the main body to the tubular body,

the main body being free to be moved downwardly through the tubular body when the releasable means has been released; and

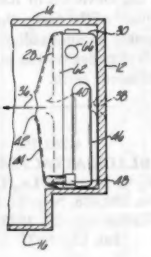
locator means coacting between the main body and the tubular body for maintaining the main body in a predetermined rotational position relative to the externally exposed locator means when the main body is secured to the tubular member and while the main body is moved through the tubular member.

4,262,749

FIRE SUPPRESSION BLADDER SYSTEM FOR FUEL TANKS

Anthony J. Monte, Utica, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 20, 1979, Ser. No. 50,403
Int. Cl.³ A62C *35/12*
U.S. Cl. 169—62 **2 Claims**



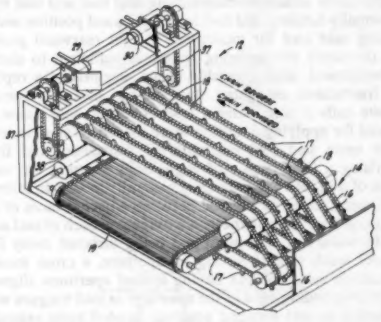
1. In a military vehicle having an upright fuel tank disposed therewithin in close proximity to one of the vehicle sidewalls; said fuel tank having two major walls located generally parallel to the vehicle sidewall, the improvement comprising a bladder **(44)** made of non-metallic imperforate flexible fabric material capable of resisting tears, said fabric bladder having length-width dimensions that correspond to the length and width of said fuel tank, with said bladder being anchored at its periphery to the fuel tank in close adjacency to the inboard face thereof whereby enemy projectiles fired through the vehicle sidewall will pass through the fuel tank and bladder, a fire suppressant system to eliminate fireballs that may be generated by the passage of a projectile through the fuel tank, said fire suppressant system comprising a thick-walled metallic pressure vessel **(46)** suitably mounted in a fixed location in close proximity to the fuel tank **(24)**, said metallic vessel **(46)** being charged with a pressurized fire suppressant, said vessel **(46)** being equipped with a normally closed, fast-acting, electrically-operated discharge valve **(48)**, a discharge pipe **(50)** extending from said valve **(48)** into the confined space between the bladder **(44)** and the adjacent fuel tank wall, said pipe **(50)** comprising a relatively short pipe section **(52)** which is connected to valve **(48)**, a curved right angle pipe section **(54)** which negotiates the turn from the side **(31)** of the fuel tank to the face thereof which is adjacent to the personnel carrying compartment and a long pipe section **(56)** of substantially the same length as the length of the fuel tank **(46)**, said long pipe section extending along the inboard wall **(28)** of fuel tank **(24)** near its lower edge, said long pipe section **(56)** having a number of relatively small nozzle openings positioned so that selected openings face up or down along the pipe length for directional discharge of pressurized suppressant, respectively into the space between the bladder and fuel tank inboard face or the vehicle floor, the end **(57)** of the long pipe section **(56)** furthest from valve **(48)** being closed, and a switch means having a sensor operator responsive to step changes in physical condition of the atmosphere within the tank due to passage of an enemy projectile therethrough, said switch means being operatively connected to the valve for actuating said valve to the open condition when the above-mentioned step change takes place.

4,262,750

SHAKER CHAIN DRIVE ASSEMBLY FOR TOMATO HARVESTER OR THE LIKE

Michael J. Merkley, Rte. 1, Box 70, Dixon, Calif. 95620; Stephen E. Jacobs, 2691 Tam O'Shanter Dr., El Dorado Hills, Calif. 95630, and Edward L. Straub, 1061 Oak Tree La., Springfield, Mo. 65800

Filed Aug. 30, 1979, Ser. No. 71,000
Int. Cl.³ A01D *17/08*
U.S. Cl. 171—27 **7 Claims**



1. A shaker for separating comestibles from their plants and including a plurality of fore and aft shaker chains movable in a fore and aft direction and a plurality of fingers upstanding from said chains, said shaker comprising:

a. means for translating comestibles and plants engaged by said fingers first in one direction and then in the opposite direction at a rate in the range of two to three cycles per second; said translating means comprising at least two hydraulic motors capable of translating said shaker chains linearly in either direction, one of said motors being effective intermittently to drive said shaker chains in a forward direction, the other of said motors being effective intermittently and out of phase with said one of said motors to drive said shaker chains in a rearward direction; a solenoid-operated hydraulic valve capable on demand of supplying and routing pressurized hydraulic fluid to said hydraulic motors so as to effect forward and rearward translation of said shaker chains; and, electrical means for producing a pair of voltage pulses of predetermined duration and frequency for actuating said valve in a predetermined sequence to control the routing of pressurized hydraulic fluid to said motors;

b. means for removing the comestibles separated from the plants; and,

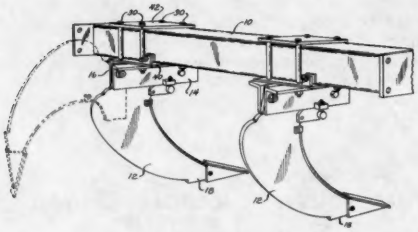
c. means for discarding the denuded plants.

4,262,751

TENSION FAILURE TRIP FOR SUBSOIL RIPPING SHANKS

Richard S. Grear, Carroll, Iowa, assignor to Royal Industries, Inc., Sac City, Iowa

Filed Jun. 8, 1979, Ser. No. 46,799
Int. Cl.[3] A01B *13/08, 61/04*
U.S. Cl. 172—271 2 Claims



1. An agricultural implement for use in ground breaking procedures including a frame adapted to be moved over the underlying terrain in a given direction, at least one ground breaking tool, a pivot connecting the tool to the frame for pivotal movement thereon about a generally horizontal axis generally transverse to said direction between a forward ground breaking position and a rearward inoperative position and releasable means interconnecting said tool and said frame for normally holding said tool in said forward position and for releasing said tool for movement to said rearward position upon the tool's encountering resistance sufficient to damage said implement, said releasable means comprising a replaceable, fracturable, elongated element, and means connecting opposite ends of said element respectively to said frame and said tool for applying a tension force to said element in major degree upon said tool encountering resistance, said frame comprising a tube; a pair of angle irons abutting the under surface of said tube and extending generally in said direction of travel, said tool being pivoted between adjacent faces of said angle irons near one end thereof, a tongue on each of said angle irons forwardly of said pivot and being directed away from said tool, each tongue having an aperture, a cross member mounted on said tool and having spaced apertures alignable with corresponding ones of the apertures in said tongues when said tool is in said forward position, headed bolts extending through aligned ones of said apertures and a nut on each of said bolts, said bolts comprising said fracturable element.

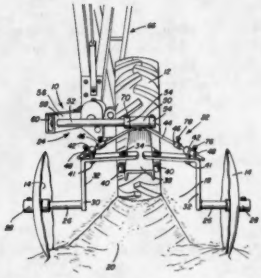
4,262,752

GROUND WHEEL AND PLOWING IMPLEMENT CONNECTED THERETO FOR FILLING WHEEL TRACKS

Carl D. Parish, Earth, Tex., assignor to K-M-P Pump Company, Inc., Earth, Tex.

Filed May 10, 1979, Ser. No. 37,850
Int. Cl.[3] A01B *37/00*
U.S. Cl. 172—574 7 Claims

1. In combination with ground wheel means subject to forming a depressed track in the earth over which the wheel means rolls, a plowing implement for levelling the track produced in the earth by the wheel means moving in a forward direction, comprising plowing means for followingly throwing earth adjacent the track into the track, mounting means for adjustably mounting the plowing means, and a pulling assembly connecting the mounting means to the wheel means, wherein the mounting means is adapted for swiveling in response to change in direction of the wheel means, whereby the plowing implement is protected against damage during reverse movement of the wheel means without substantially impeding said reverse movement, said pulling assembly including follower means to permit the plowing means to match the contour of the earth, said plowing means comprising a pair of disks mounted opposably the mounting means, the disks when in use describing a path of travel over the earth immediately adjacent the track and forming an acute angle with respect to their direction of travel, whereby the disks travel over the earth adjacent the track and throw said adjacent earth into the track, said pulling assembly comprises said follower means, together with a pull bar fixedly mounted on the wheel means and a channel bar to which the mounting means is attached, the channel bar being connected by the follower means to the pull bar, the follower



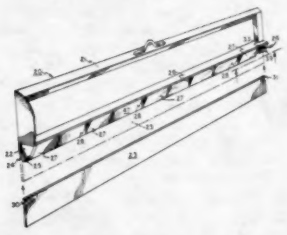
means further comprising a follower rod attached to the pull bar and terminating directly behind the wheel means and when in use also terminating above the tracks, the follower means further including a swivel collar to which the channel bar is rigidly attached, the swivel collar being freely rotatable on the follower rod to permit the channel bar mounted thereby to pivotably adjust the elevation of the mounting means in response to the contour of the earth, the follower means further comprising adjustable locking collars to prevent longitudinal sliding of the swivel collar on the pull bar and to center the disks upon said adjacent earth.

4,262,753

PLOW BLADE ATTACHMENT SYSTEM

André H. Vanchot, 65 Marshall La., Derby, Conn. 06418

Division of Ser. No. 850,688, Nov. 11, 1977, Pat. No. 4,164,821.
This application Apr. 27, 1979, Ser. No. 33,853
Int. Cl.[3] E02F *3/76*
U.S. Cl. 37—41 9 Claims



1. A snow plow blade for rapid installation in a snow plow and scraper unit comprising:

(A) a generally elongated rectangular shape incorporating

(a) a horizontally extending, elongated top edge,

(b) two vertically extending side edges in juxtaposed, spaced, parallel relationship, and

(c) a horizontally extending, elongated bottom edge, in juxtaposed, spaced, parallel relationship to the top edge and incorporating the plowing and scraping portion;

(B) a first flange member

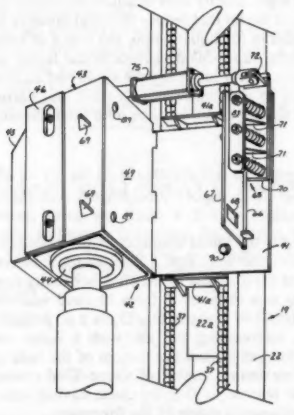
(a) formed along the upper edge of the blade at one end thereof, and
(b) incorporating a ramped, camming and sliding surface forming the lower edge thereof; and
(C) a first holding recess
(a) formed in one vertical side edge of the snow plow blade and extending inwardly from said side edge to define therewith a first side edge entrance portal, and
(b) incorporating the ramped camming surface of the first flange member as the upper surface of the first holding recess;
(D) a second flange member
(a) formed along the top edge of the blade at the opposite end thereof, and
(b) incorporating an elongated lock engaging surface as its lower defining edge; and
(E) a second holding recess
(a) formed in the other vertical side edge of the snow plow blade and extending inwardly from said side edge to define therewith a second side edge entrance portal, and
(b) incorporating the elongated lock engaging surface of the second flange member as the upper surface of the second holding recess.

4,262,754

ROTARY DRILLING DEVICE WITH PIVOTING DRILL HEAD ASSEMBLY

Ivan L. Nelson, Osceola, Iowa, assignor to Southern Iowa Manufacturing Co., Osceola, Iowa

Filed May 15, 1979, Ser. No. 39,310
Int. Cl.[3] E21B *19/00*
U.S. Cl. 173—43 **6 Claims**



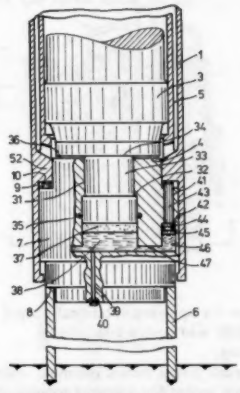
1. In a rotary drilling device for powering a drill string into subterranean strata and having a supporting main frame, a vertically alignable drill mast mounted from said main frame, a drill string handling means disposed at a lower end of said drill mast, winch means disposed at an upper end of said mast for raising and lowering said drill string, a drill head assembly for applying rotational movement to said drill string, elevational means on which said head assembly is mounted on said mast for vertical movement thereon, and drive means for controlling said elevational means to raise or lower said head assembly on said mast, said head assembly comprising:
(a) a hinge plate connected to said elevational means,
(b) a rotary drive unit attachable to one end of said drill string and having rotary power means to drive said drill string;
(c) support means for said drive unit having at least two opposite side walls and a wall connecting therebetween;
(d) coacting hinge means on said hinge plate and said support means to provide for pivotal movement of said support means from an operating position in which said drive unit is in alignment with said string handling means to a pivoted position in which said drive unit is removed from said alignment;
(e) coacting latch means on said hinge plate and said support means to normally maintain said support means in said operating position when in a closed condition and to release said support means when in an open condition;
(f) a single power means for actuating said latch means from a closed condition to an open condition and for pivoting said support means into said pivoted position and returning said support means to said operating position and for returning said latch means to said closed condition; and
(g) means for retaining said latch means in an open condition during pivoting movement of said support means.

4,262,755

SHOCK ABSORBING PILE DRIVER

Hans Kühn, Hamburg, Fed. Rep. of Germany, assignor to Koehring GmbH, Hamburg, Fed. Rep. of Germany

Filed Apr. 10, 1978, Ser. No. 894,850
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716701
Int. Cl.[3] B25D *17/06*; E02D *13/10*
U.S. Cl. 173—131 **1 Claim**



1. In a pile driver which utilizes a hollow, axially elongated housing with a substantially cylindrical wall and a bottom end, a ram slidably located within the housing and movable upwardly and downwardly therein and a ram follower located partially inside the housing, extending out of the bottom end thereof and slidably guided within the housing to execute limited axial movement when struck by the ram, the improvement comprising a radially extending outer support flange located on the ram follower; an annular inner support flange extending radially inwardly from the wall of the housing intermediate the outer support flange and the ram; a plurality of pistons each having a top end and a bottom end, all pistons being axially movable, with one of the ends of each piston abutting one of the flanges and another of the ends of each piston being sealingly guided within and movable into and out of a closed compartment in another of said flanges to increase and decrease the volume of the compartment upon movement of that piston; and means for introducing pressurized gas into the compartment and retaining the gas therein, said another of the support flanges being the outer support flange and having a plurality of axially elongated bores located within the ram follower which are axially parallel to the housing and are uniformly circumferentially spaced around said one of the support flanges, each piston being slidably and sealingly movable within a corresponding bore, each of the compartments

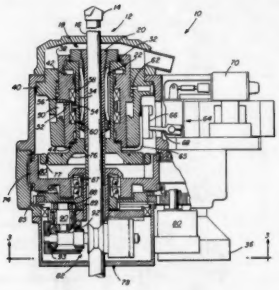
being formed by a corresponding bore and being delimited by a corresponding piston, the ram follower including a central axial well with an open top facing towards the ram and a chamber, the well communicating with the chamber and the chamber communicating with the bores, and an impact piston slidably and sealingly located within the well and able to project out of the top of the well to be struck by the ram prior to the ram follower being struck thereby.

4,262,756

TORQUER/THRUSTER

John H. Blanz, 282 E. Riding Dr., Carlisle, Mass. 01741

Filed Nov. 17, 1978, Ser. No. 961,606
Int. Cl.³ B23Q *5/00*; E21C *5/00*; B23Q *5/027, 5/033*
U.S. Cl. 173—149 **15 Claims**



1. A device for applying rotational torque and longitudinal thrust to a drill, said device comprising:

(a) a housing;

(b) cylindrical piston means mounted within said housing, said piston means fixed against rotational movement with respect to said housing and constrained for limited longitudinal movement with respect to said housing;

(c) collet means mounted within said piston means, said collet means including a collet holder and a collet, said collet holder mounted within said piston means, said collet constrained for longitudinal expansion and inward contraction, said collet configured to engage and to disengage a shaft of the drill;

(d) bladder means disposed between said piston means and said collet, said bladder means and said collet means fixed against movement with respect to one another, said bladder means and said collet means constrained for limited axial movement within said collet holder;

(e) means for longitudinally moving said piston means and for urging said bladder means against said collect for inwardly contracting and longitudinally expanding said collet, said collet captively engaging the drill shaft when said bladder means is urged against said collet, said piston means applying longitudinal thrust to a drill shaft captively engaged by said collet; and

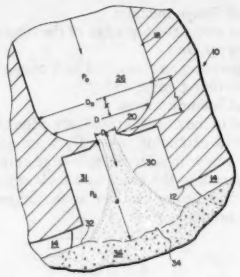
(f) drive means operatively connected to said collet means for rotating said collet means, whereby rotational torque is applies to the drill shaft captively engaged by said collet.

4,262,757

CAVITATING LIQUID JET ASSISTED DRILL BIT AND METHOD FOR DEEP-HOLE DRILLING

Virgil E. Johnson, Jr., Gaithersburg; T. R. Sundaram, Columbia, and Andrew F. Conn, Baltimore, all of Md., assignors to Hydronautics, Incorporated, Laurel, Md.

Filed Aug. 4, 1978, Ser. No. 931,244
Int. Cl.³ E21B *7/18*
U.S. Cl. 175—67 **14 Claims**



10. A method for deep-hole drilling through earth formations which comprises rotating and advancing a drill bit having mechanical cutters on its face downwardly into the hole at a controlled rate of movement, simultaneously discharging from the cutting face of the bit a plurality of downwardly directed cavitating liquid jets containing vapor-filled cavities formed by directing a high velocity flow of liquid through nozzles located on the face of the bit that reduce the local pressure surrounding the gas nuclei in the liquid below the vapor of pressure of the liquid to form vapor-filled cavities in the liquid, said nozzles having a housing for receiving the liquid and an interior chamber tapering to a downwardly directed and narrower outlet orifice and shaped in accordance with the following formula:

$$\frac{D}{D_O} = 1 - \left(1 - \frac{D_E}{D_O}\right)\left(\frac{D_O}{L} \times \frac{X}{D_O}\right)^n$$

wherein D_O is the initial diameter of the chamber; D_E is the diameter of the outlet orifice; L is the distance between D_O and D_E; and D is the diameter of the chamber at any point between D_O and D_E at a distance X from D_O and wherein D_O/L is approximately 2 or greater; D_O/D_E is 3 or greater; and n is 2 or greater, surrounding the jets with a liquid medium and impinging the jets against the bottom of the hole at the point where the maximum number of vapor-filled cavities collapse on the hole bottom to thereby cause cavitational erosion as well as mechanical cutting of the formation.

4,262,758

BOREHOLE ANGLE CONTROL BY GAGE CORNER REMOVAL FROM MECHANICAL DEVICES ASSOCIATED WITH DRILL BIT AND DRILL STRING

Robert F. Evans, 631 Honeywood La., La Habra, Calif. 90631

Division of Ser. No. 928,703, Jul. 27, 1978, Pat. No. 4,211,292. This application Dec. 10, 1979, Ser. No. 101,853
Int. Cl.³ E21B *9/34*
U.S. Cl. 175—73 **21 Claims**

1. A rotary drill bit for selectively controlling the advancement angle of a borehole cut by rotating said drill bit against material, comprising:

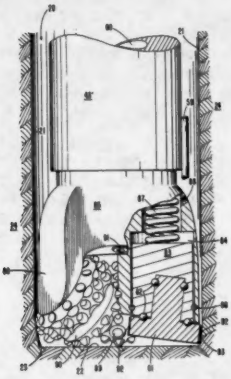
a bit support structure;

a cutter assembly positioned on said drill bit housing and comprising cutting elements arranged for cutting an axially extending cylindrical sidewall of the borehole, a drill face extending transversely with respect to the sidewall

and a gage corner extending circumferentially from the drill face radially outward at an inclination to the sidewall;

extendable means associated said drill bit structure for selectively moving to a projected position and a retracted position;

a cutter member independent of said cutter assembly and attached to said extendable means at a predetermined position for substantially contacting the gage corner mate-



rial when said extendable means is moved to the projected position and for avoiding substantial contact with the gage corner material when said extendable means is moved to the retracted position; and

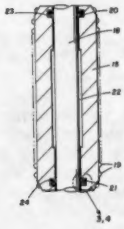
activation means adapted for selectively moving said extendable means to the projected position during a predetermined interval of drill bit rotation and for selectively moving said extendable means to the retracted position during the remaining interval of drill bit rotation.

4,262,759

COMBINATION SEAL AND PRESSURE RELIEF VALVE FOR SEALED DRILL STRING UNIT

James W. Young, Irving, and Ricky K. Schpok, Dallas, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 24, 1979, Ser. No. 78,366
Int. Cl.³ E21B *10/24*
U.S. Cl. 175—227 **4 Claims**



1. An improved seal assembly for a drilling tool operated as an element of a rotary drill string in a fluid drilling environment and having a main body portion including a bearing shaft member, a roller cutter member rotatably mounted on said shaft member, said members cooperating to define therebetween an annular space for a lubricant reservoir and, one of said members having an annular groove for receipt therein of seal means for sealing said reservoir from said drilling fluid and wherein said improved seal assembly is disposed therein and comprises:

a first resilient annular ring seated in said groove and defining axially opposed sidewalls sealingly engaging the sidewalls of said groove and a wedge-shaped sealing surface facing said other member and terminating in an annular apex in sealing engagement with said other member, thereby defining a first angled surface facing said reservoir and

a second angled surface facing said drilling fluid environment and wherein, said first annular ring defines an annular channel therein open on said sidewall adjacent said second angled surface and,

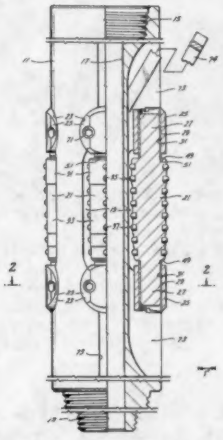
a second resilient annular ring disposed within said channel, said ring being of a resilient material less resistant to flexure than said first ring whereby external pressure on said second angled face tends to force said apex into tighter sealing engagement with said other member and excessive internal pressure on said first angled face forces said apex to withdraw from said sealed engagement by compressing said second annular ring to relieve said internal pressure from said reservoir.

4,262,760

REAMER-STABILIZER

Glenn L. Allison; Thomas E. Winship, and Daniel B. Justman, all of Houston, Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Apr. 30, 1979, Ser. No. 34,759
Int. Cl.³ E21B *10/30, 10/22*
U.S. Cl. 175—347 **4 Claims**



1. Apparatus useful in earth boring by the rotary method, comprising:

a tubular body;

thread means at each end of the body for making a rotary shouldered connection with an adjacent drill string member,

a plurality of circumferentially spaced, axially alongated pockets in the sides of the body,

a plurality of rollers, each disposed in one of said pockets,

a plurality of sockets in the sides of the body positioned one at each end of each pocket, each socket opening into the adjacent pocket,

a plurality of blocks disposed in each socket, each roller having an integral pin at each end, each pin being rotatably supported in an opening in one of the blocks, each block having a front facing radially outward of said body and a back facing radially inward and a side wall portion making an interference fit with the socket,

tool cooperation means carried by the apparatus for cooperation with a tool for forcing out the blocks when it is desired to replace the rollers,

said tool cooperation means comprising tool passage means, each providing an opening extending from the outer surface of said body between a socket and the nearest end of the body to behind the bottom of the socket, a bearing sleeve in each such opening in said blocks, each sleeve making an interference fit with the respective opening,

each said pin of each said roller being rotatably disposed in each of said bearing sleeves,

each bearing sleeve extending out beyond the end of the hole in the respective block toward the end of the adjacent roller to take the end thrust of the roller,

each bearing sleeve having a radial flange at said end thereof that extends axially out of the hole in the respective bearing block toward the adjacent end of the respective roller, each said flange providing an axial thrust bearing for the adjacent end of the respective roller,

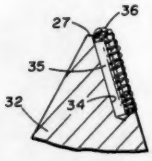
each bearing sleeve being slotted axially, leaving a circumferential gap to allow contraction of the sleeve when positioned in the respective hole of one of said blocks, each sleeve being made of resilient material.

4,262,761

LONG-LIFE MILLED TOOTH CUTTING STRUCTURE

Morgan L. Crow, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 5, 1979, Ser. No. 82,386
Int. Cl.[3] E21B *10/52*
U.S. Cl. 175—374 **6 Claims**



1. A method of manufacturing an earth boring cutter having at least one tooth with a crest formed by outwardly converging flanks, comprising the steps of:

drilling a hole into the tooth from the crest of the tooth and generally adjacent one of said flanks;

positioning a tungsten carbide rod in said hole; and

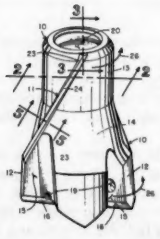
applying hardfacing to the tooth crest across said hole and along said one of said flanks for penetrating therethrough to hold the tungsten carbide rod in place.

4,262,762

ANTI-COLLARING STRUCTURE FOR IMPACT BIT

Robert P. Potratz, 10615 E. 11th Ave., Spokane, Wash. 99206

Filed Oct. 9, 1979, Ser. No. 82,693
Int. Cl.[3] E21B *10/44*
U.S. Cl. 175—401 **3 Claims**



1. In an impact rock drill of the type having a larger forward drilling portion communicating by a diametrically smaller transition shoulder to a rearward shank portion diametrically smaller than the transition shoulder, with plural peripherally spaced flutes defined through the diametrically larger drilling portion and into the transition shoulder, the invention comprising, in combination:

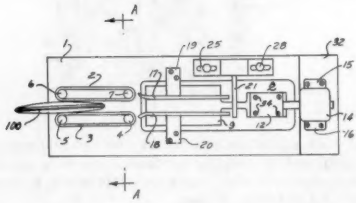
at least one helical rib having a substantially square cross-sectional shape positioned on the transition shoulder and rearward shank portion and extending continously, from the juncture of drilling portion and transition shoulder along the rearward trailing edge defining a flute, spirally rearwardly at an angle in the direction of the normal rotation of the rock drill bit to tend to cause particulate material contacted by the ribs to move forwardly there along and into the adjacent flute.

4,262,763

SORT-BY-WEIGHT AND LABELLING METHOD AND APPARATUS

Seymour H. Raskin, 7333 Rustic Valley Dr., Dallas, Tex. 75248

Filed Mar. 7, 1979, Ser. No. 18,440
Int. Cl.[3] G01G *23/38, 19/52, 3/14;* B07C *5/16*
U.S. Cl. 177—4 **18 Claims**



1. In a method of determining the weight of a plurality of objects combined in a parcel, the steps of: moving the parcel into engagement with a stop member to position the objects relative to each other in the parcel; moving the parcel containing the positioned objects at a known velocity to impact against an elastic probe surface to reduce the velocity of the parcel to zero; and generating a signal upon impact of a magnitude which is related to the magnitude of the momentum of the parcel before impact.

4,262,764

CONVERTIBLE CHASSIS FOR TRACK LAYING VEHICLES

Peter B. Kraus, Lake Oswego, Oreg., assignor to De Lorean Manufacturing Company, Bloomfield Hills, Mich.

Filed Oct. 22, 1979, Ser. No. 87,019
Int. Cl.[3] B62D *55/12, 55/16*
U.S. Cl. 180—9.48 **4 Claims**

1. In a track laying vehicle, comprising a vehicle frame; a vehicle power transmission differential assembly carried by the frame; and two sprocket drive shaft assemblies on a common longitudinal axis, each extending transversely to the vehicle from the differential assembly, and each having at its distal end a sprocket wheel attachment flange;

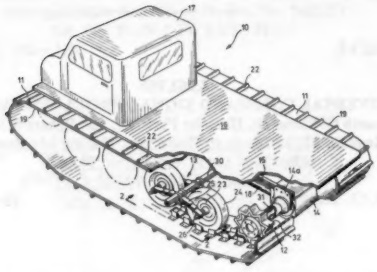
the improvement comprising:

at least one elongated rigid cross-member secured to the frame and carrying an extension transverse to the vehicle beyond each side of the frame;

two wheel bogie assemblies for engaging and guiding and an endless belt track, each adapted to be secured to one of the extensions of the cross-member at selectable locations thereon; and

two endless belt drive sprocket wheels, each having a periphery adapted to engage and drive an endless belt track and each having sprocket flange means for mounting of the sprocket wheel reversibly upon one of the sprocket

wheel attachment flanges, said sprocket flange means being disposed a substantial distance from the plane normal and central to the track engaging periphery, so that said periphery may be selectably disposed closer to or farther from the longitudinal centerline of the vehicle.



4,262,765

FARM VEHICLE

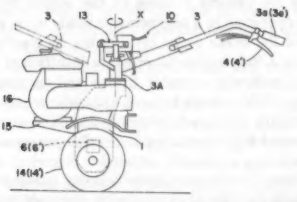
Takashi Nomura, Osaka, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Sep. 24, 1979, Ser. No. 78,324

Claims priority, application Japan, Feb. 15, 1979, 54-19647[U]; Feb. 16, 1979, 54-19157[U]

Int. Cl.³ B62D *51/06*

U.S. Cl. 180—19 R **5 Claims**



1. In a farm vehicle comprising steering handles reversible relative to a vehicle body by oscillating on a cylindrical column securedly standing on a transmission case, and a clutch connection switch mechanism adapted to automatically select a combination for integral rotation from a pair of drive rotatable elements interlocked with a pair of right and left control means mounted on the steering handles and a pair of driven rotatable elements, interlocked with a pair of right and left steering clutches mounted in the transmission case by sliding a pair of interlocking elements, integrally slidable with a slidable and lockable control rod, said switch mechanism comprising:

disc cam means mounted on said cylindrical column, and

a pair of cam followers contacting a periphery of said cam means and interlocked with said control rod,

whereby said clutch connection switch mechanism is operable by oscillations of said steering handles on said cylindrical column.

4,262,766

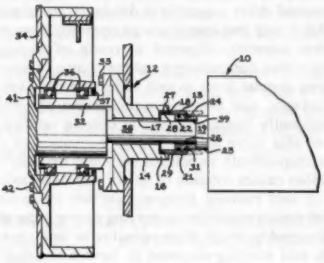
DIFFERENTIAL HOUSING MOUNTING SUPPORT

Vaikai K. Brown, Thompson; Roy M. Gedeon, Cleveland, and David T. Ping, Mentor, all of, assignors to Towmotor Corporation, Mentor, Ohio

Filed Nov. 5, 1979, Ser. No. 90,968

Int. Cl.³ B60K *17/16*

U.S. Cl. 180—75 **8 Claims**



1. A differential housing mounting support for releasably connecting a housing (**10**) to a vehicle frame (**12**) comprising:

a support member (**14**) connected to the vehicle frame (**12**) having a bore (**18**) therein opening in a direction facing said housing (**10**);

a protrusion (**19**) on said housing (**10**) axially aligned with said bore (**18**);

a support sleeve (**13**) slidably positionable on said protrusion (**19**) between a support member engaging position supporting said housing (**10**) wherein said support sleeve (**13**) is disposed within said bore (**18**) and a support member releasing position wherein said support sleeve (**13**) is removed a spaced distance from said bore (**18**).

4,262,767

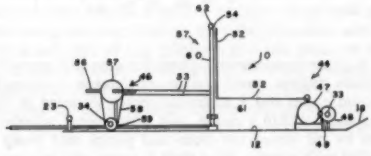
SNOW SCOOTER

Nelson Weygant, 1921 24th Ave. No., St. Petersburg, Fla. 33713

Filed Sep. 5, 1978, Ser. No. 939,439

Int. Cl.³ B62M *27/02*

U.S. Cl. 180—192 **5 Claims**



1. A vehicle of the type primarily designed to travel over snow and ice covered terrain, said vehicle comprising: a base comprising a sheet structure having a substantially planar configuration, running gear means movably mounted on said base and including at least two track assemblies each said track assembly mounted on opposite sides of said base along a predetermined portion of a lateral edge thereof, axle means rotatably mounted on said base and including two axle elements each defining a drive axle, each said track assembly connected in driven relation at opposite ends thereof to correspondingly positioned ends of said drive axles, drive means comprising a first and second drive assembly each drivingly connected to one of said drive axles and constructed to both operate concurrently and independently of one another, said drive means

mounted on the upper surface of said base portion so that the underside of said base portion forms a sled configuration, a power means connected to said first and second drive assemblies wherein activation of said power means causes driving rotation of at least one of said drive axles, rotation of said running gear and movement of said vehicle, said first drive assembly is drivingly attached to one of said drive axles and comprises an electrically driven motor, said power means comprising an electric power source connected to said motor, a control switch interconnected, in current regulating position between said electric power source and said electric motor, said second drive assembly is drivingly attached to the other said drive axle and comprises an operator powered pedal and sprocket assembly disposed in reach of the operator, said power means comprising a manual power source defined by applying manual force to said pedal and sprocket assembly by the operator, said first and second drive assemblies are each independently interconnected in driving relation to different ones of said drive axles whereby activation of either power source respectively associated with said first and second drive assemblies causes rotation of one of said drive axles and movement of said running gear, and further comprising operator support means on said base, steering means secured to said base and disposed in reach of an operator on said operator support means, said steering disposed to have a simultaneous pulling and twisting force exerted thereon by the operator, said base being disposable in an inclined pivoted relation about the trailing edge thereof when said force is exerted on said steering means.

4,262,768

POWER TRANSMISSION SYSTEM FOR TRACTOR

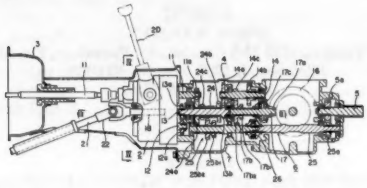
Hiroshi Itatani; Kenji Matsuda, both of Sakai; Tadao Terahigashi, Moriguchi; Etsuzi Kisita, Sakai, and Masatugu Tone, Hashimoto, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Sep. 14, 1978, Ser. No. 942,149

Claims priority, application Japan, Jan. 31, 1978, 53-10938; Feb. 6, 1978, 53-12798

Int. Cl.³ B60K *17/28, 17/34*

U.S. Cl. 180—242 **5 Claims**



1. A power transmission system for a tractor comprising; a hydraulic stepless speed change mechanism composed of a hydraulic pump and a hydraulic motor disposed in vertical arrangement within a casing, said motor being adapted to be driven by oil forced out from said pump, said pump being provided with a pump drive shaft for receiving engine power at a front end portion thereof, said pump drive shaft having a rear end portion extending rearwardly through said casing, said motor being provided with a motor output shaft having a rear end portion extending rearwardly through said casing and parallel to said rear end portion of said pump drive shaft, a gear type power take-off transmission mechanism coupled to said rear end portion of said pump drive shaft, a drive transmission mechanism coupled to said rear end portion of said motor output shaft, said drive transmission mechanism comprising a gear speed-change mechanism to provide plural steps of output speed, a differential gear case housing a differential gear for driving rear wheels of the tractor and which is driven from said gear speed-change mechanism, said drive and power take-off transmission mechanisms each being disposed within a single gear transmission case arranged linearly between said case of the hydraulic stepless speed change mechanism and said differential gear case, and a front wheel drive shaft adapted to receive power from said gear speed change mechanism and extending forwardly through said case of said hydraulic stepless speed change mechanism.

4,262,769

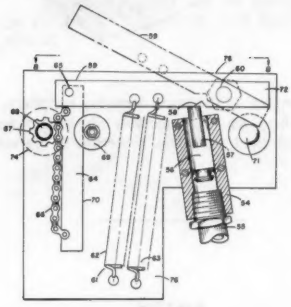
UNIVERSAL COMMAND SIGNAL PRODUCING MEANS

Kenneth G. Bernoteit, Hanover Park, Ill., and Robert F. Bourke, Kamiah, Id., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Sep. 19, 1978, Ser. No. 943,635

Int. Cl.³ B60K *26/02*

U.S. Cl. 180—323 **10 Claims**

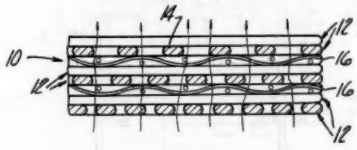


1. In an electrically driven wheeled vehicle apparatus having an electrical propulsion means including a drive motor connected to drive wheels of the vehicle, hydraulically operable brakes for braking the vehicle wheels, a foot pedal, and hydraulic means responsive to operation of the foot pedal for producing hydraulic pressure to operate the brakes, the improvement comprising

a control for causing braking of the wheels by the drive motor operating in a regenerative mode upon initial operation of the brake pedal causing the hydraulic means to produce a low hydraulic pressure insufficient to operate the hydraulically operable brakes and causing effective braking of the wheels by said hydraulic means only after the pressure produced by said hydraulic means reaches a preselected high operating hydraulic pressure, said control including a rotatably adjustable electrical element for controlling the regenerative braking current when the drive motor is caused to operate in the regenerative mode, and means for adjusting the electrical element as a function of the positioning of the foot pedal including sprocket means connected to the electrical element for rotation thereof, a pivotally mounted carrier having a first arm pivotally movable about a first pivot axis as a function of movement of the foot pedal, and a second arm having a portion pivotally connected to a portion of the first arm defining a second pivot axis arcuately movable about said first axis, a chain carried by said second arm to be meshed with said sprocket for rotating the electrical element as an incident of movement of the chain as a result of the arcuate movement of said second arm portion connected to said first arm portion, and means acting radially of said sprocket against said second arm for effectively maintaining positive meshed engagement of the chain with said sprocket in all positions of the movement of said second arm.

4,262,770
POROUS ACOUSTIC ELEMENT AND A METHOD OF CONTROLLING AERODYNAMIC NOISE IN A FLOWING GAS

Andrew R. Spencer, Bloomfield Hills, Mich., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Continuation of Ser. No. 781,601, Mar. 28, 1977, abandoned. This application Sep. 22, 1978, Ser. No. 945,261
Int. Cl.[2] F01N *1/24;* B65H *81/00*
U.S. Cl. 181—258 **5 Claims**

1. A porous acoustic gas expansion control element comprising:

a first porous layer comprised of a plurality of layers of windings of wire, each of said windings being spaced apart at the same pitch with successive layers being wound to cross each other to create a multiplicity of first spaces having a total ross-sectional area;

a second porous layer comprised of a plurality of layers of windings of wire, each of said windings being spaced apart at the same pitch, said pitch being greater than the pitch of said first porous layer windings, with successive layers being wound to cross each other to create a multiplicity of second spaces, said multiplicity of second spaces having a total ross-sectional area larger than the total cross-sectional area of said multiplicity of first spaces;

a transition layer interposed between said first and second porous layers, said transition layer being formed with a multiplicity of plenum openings, said multiplicity of openings having a cross-sectional area at least as great as the cross-sectional area of said multiplicity of second spaces, said transition layer being configured and oriented to allow gas expansion from said first porous layer to said second porous layers, whereby the interference pattern of the overlay of said transition layer with each of said first and second porous layers does not produce blockages or openings of smaller area than the spaces of either of said first or second porous layers; and

said first and second porous layers and said transition layer being bonded together to form an integral structure.

4. A method of reducing aerodynamic noise in a gas flowing from a region of relatively high pressure to a region of relatively lower pressure by limiting the gas flow velocity comprising:

disposing a first porous layer in juxtaposition to said high pressure region to cause said gas to flow through said first porous layer, said first porous layer being comprised of a plurality of layers of windings of wire, each of said windings being spaced apart at the same pitch with successive layers being wound to cross each other to create a multiplicity of first spaces, said first spaces having a total predetermined cross-sectional area;

disposing a transition layer adjacent said first porous layer remote from said high pressure region, said transition layer being formed with a multiplicity of plenum openings of total cross-sectional area at least as great as the total predetermined cross-sectional area of said multiplicity of first spaces in said first porous layer;

disposing a second porous layer, said second porous layer being comprised of a plurality of layers of windings of wire in juxtaposition to said transition layer, each of said windings being spaced apart at the same pitch, said pitch being greater than the pitch of said first porous layer windings, with successive layers being wound to cross each other to create a multiplicity of second spaces, said second spaces having a total predetermined cross-sectional area greater than said total predetermined cross-sectional area of said first spaces, such that the difference in total cross-sectional area corresponds to the increase in the volume of said gas as said pressure decreases in flowing through said first porous layer and said transition layer;

said transition layer further being oriented to said first porous layer so as to preclude an interference pattern producing blockages or openings of smaller area than either of said first or second porous layers;

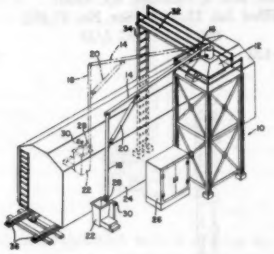
bonding together said first and second porous layers and said transition layer; and

then passing said gas through a sufficient number of alternating porous and transition layers from said high pressure region to said lower pressure region to decrease said gas pressure to that existing in said low pressure region without exceeding a predetermined gas flow velocity.

4,262,771
SAFETY DEVICE FOR CROSSING RAILROADS

John K. Langsdon, Jr., P.O. Box 1018 Industrial Park, Columbia, Tenn. 38401

Filed Feb. 5, 1979, Ser. No. 9,521
Int. Cl.[3] B66F *11/04*
U.S. Cl. 182—1 **1 Claim**



1. A railroad crossover safety device positioned adjacent a railroad track comprising an hydraulically operated man-moving unit having a pivotal point anchored on an above-the-ground platform of a permanent tower, which has four stationary rigid legs substantially perpendicular to a ground level, from which pivotal point at least one boom projects toward a bucket adapted to hold a person, said at least one boom being connected to said bucket at its end opposite said pivotal point, a ladder being provided leading from the ground to said platform from one side of said platform and said platform being provided with a walkway leading therefrom and crossing over said railroad track at at least the height of a railroad car, said walkway having a ladder at the end thereof opposite the platform end thereof of sufficient length to extend to said ground level.

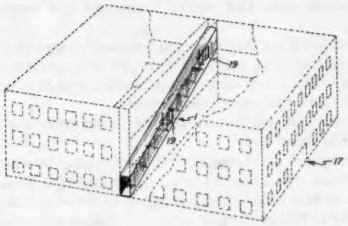
4,262,772
ENCLOSED CHUTE FIRE ESCAPE

Hermine Richardson, 32 Clifford Rd., Menands, N.Y. 12204

Filed Dec. 17, 1979, Ser. No. 104,115
Int. Cl.[3] A62B *1/20*
U.S. Cl. 182—48 **7 Claims**

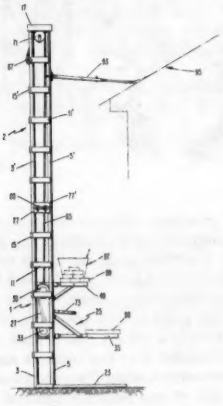
1. An enclosed chute fire escape for use, in the event of a fire, in the safe, controlled and rapid exit of persons from the building structure with which said fire escape is employed without exposure to flames, heat or smoke, said fire escape comprising an elongated chute, support brackets, depending legs and handle rails, said chute having side walls carrying said support brackets therebetween, said support brackets carrying said depending legs, said depending legs carrying said handle

rails, said handle rails being disposed throughout the length of said chute, each of said handle rails being centrally disposed relative to a person's body with said person descending said



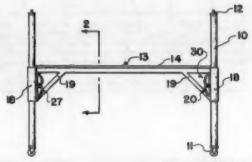
chute on his back, said depending legs carrying and mounting said handle rails for non-interfering engagement physically by a person's hands in guiding his body, or slowing or stopping same, in descent on his back down said chute.

4,262,773
PORTABLE SCAFFOLD
Billy G. Basham, Rte. 2, Paducah, Ky. 42001
Filed Jul. 13, 1979, Ser. No. 57,492
Int. Cl.³ E04G *1/18*
U.S. Cl. 182—132 **10 Claims**



1. A self-contained scaffold assembly, comprising:
first and second pairs of parallel, spaced-apart vertical support members, said vertical support members being joined by a plurality of horizontal spaced-apart side braces, said first and second pairs of support members joined together by a plurality of horizontal, spaced-apart rear braces, said scaffold assembly being open at the front and forming a generally U-shaped cross-section;
a movable carriage unit having spaced-apart side vertical runners and connected by horizontal brace means and at least a pair of rollers on each side runner attached thereto, each said roller captured between and engaging both members of said pair of vertical support members, said carriage unit arranged for vertical movement within the confines of and with respect to said vertical support members;
platform means to support a work load attached to said carriage unit; and
hoist means, attached to said carriage unit, for controllably positioning said platform means with respect to said vertical support members.

4,262,774
ADJUSTABLE SCAFFOLD
Roman Chez, 1230 Forget St., Regina, Saskatchewan, Canada
Filed Nov. 26, 1979, Ser. No. 97,316
Int. Cl.³ E04G *1/18, 1/28*
U.S. Cl. 182—179 **6 Claims**

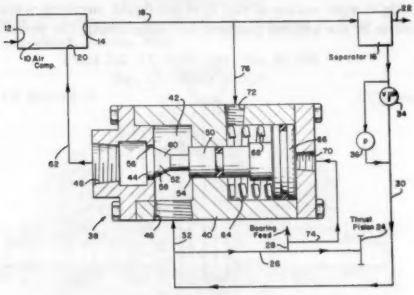


1. Adjustable scaffolding which includes vertically extending supporting legs, a platform extending therebetween, and means operatively connecting and supporting the platform to the legs for selective vertical movement therealong; releasable latch means operatively connected between each of said legs in said platform, said releasable latch means including a spring loaded latch pin on said platform selectively engageable with any one of a plurality of latch pin engaging means on said legs and means to selectively lock said latch pin in the closed position, said spring loaded latch pin including a leaf spring secured by one end thereof to said platform, a latch pin extending therefrom, said leaf spring normally urging said latch pin towards the leg engaging position, and means to move said latch pin away from said leg engaging position against pressure of said leaf spring, said means to selectively lock said latch pin including a locking member mounted for vertical sliding movement to said platform above said leaf spring and adjacent the upper end thereof and means on said locking member automatically engaging over said other end of said leaf spring when said latch pin is in the closed position.

4,262,775
OIL SUPPLY MEANS FOR A MACHINE
Paul D. Webb, Tioga, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed May 7, 1979, Ser. No. 36,606
Int. Cl.³ F01M *1/16*
U.S. Cl. 184—6.4 **13 Claims**

1. Oil supply means, for a machine such as a gas compressor, gas expander, pump, and the like, comprising:
a reservoir of oil;
means defining a source of gas at excursive pressures;
means communicating said reservoir and said source for pressuring said reservoir with said excursive pressures of said source;
oil conducting means communicating with said reservoir for conducting oil therefrom to a machine;
oil shunting means communicating with said oil conducting means for shuntingly diverting oil from said oil conducting means to diminish oil flow via oil conducting means; and
means interposed in said oil conducting means for meteringly controlling oil flow therethrough to cause varying quantities of oil to be shuntingly diverted therefrom to said oil shunting means; wherein
said controlling means comprises means responsive to attenuating pressures of said reservoir for diminishing oil flow through said oil conducting means, and causing increased

oil flow through said shunting means, and responsive to elevating pressures in said reservoir to increase oil flow through said oil conducting means and to diminish oil flow through said shunting means.

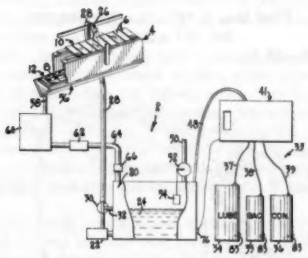


4,262,776

CONVEYOR LUBRICATING SYSTEM

Clark M. Wilson, Minneapolis, and Robert B. Barrett, Lake Elmo, both of Minn., assignors to H. B. Fuller Company, Saint Paul, Minn.

Filed Sep. 13, 1978, Ser. No. 941,971
Int. Cl.[3] G05D *11/08*; B08B *9/08*
U.S. Cl. 184—15 R **10 Claims**



1. An improved lubricating system of the type which utilizes a lubricating composition formulated from a concentrate of the composition, wherein the concentrate may include one or more separate concentrate ingredients therein; and wherein the lubricating system includes a holding tank; means operatively connected to the holding tank for supplying the composition concentrate thereto, wherein the holding tank has means for diluting the concentrate supplied thereto forming the lubricating composition; and means operatively connected to the holding tank for applying the lubricating composition to the conveyor; and wherein the improvement relates to the composition concentrate supplying means and comprises:

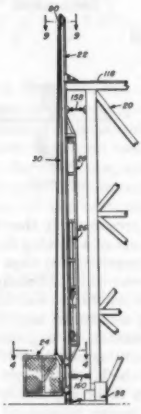
means for separately supplying each of the concentrate ingredients to the holding tank such that the amount of each ingredient contained in the lubricating composition can be separately controlled, wherein the concentrate ingredient supplying means includes a source of each of the ingredients and selectively adjustable pumping means for pumping each of the ingredients from its source to the holding tank to volitionally vary the amount of each ingredient being pumped to the holding tank.

4,262,777

HYDRAULIC ELEVATOR

Gordon W. Christopher, P.O. Box 826, Odessa, Tex. 79760

Filed Aug. 16, 1979, Ser. No. 67,040
Int. Cl.[3] B66B *11/04*
U.S. Cl. 187—17 **4 Claims**



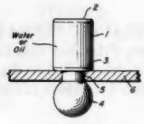
1. For use in conjunction with a drilling rig platform or similar closely adjacent vertical structure, an elevator, said elevator including a vertical framework adapted to parallel said closely adjacent vertical structure, said framework comprising laterally spaced support standards defining vertical guides, mounting and stabilizing means fixed to said standards and projecting rearwardly therefrom for engagement with said drilling rig platform or similar closely adjacent vertical structure to maintain said standards in closely spaced parallel relation thereto, a carrier cage positioned generally forward of said standards, means on said cage engaging said standards for guided movement of the cage therealong, a multiple-sheave assembly positioned generally rearward of said standards, said multiple-sheave assembly comprising a cross-beam fixed to and extending transversely between said standards, multiple sheaves mounted on said cross-beam, a traveling beam positioned in a spaced parallel relation over said cross-beam, means engaged between the traveling beam and the standards for guiding movement of the traveling beam along said standards, and multiple sheaves mounted on said traveling beam, a pulley mounted on each of said standards, first cable means engaged about selected ones of the multiple sheaves of the multiple-sheave assembly and extending therefrom about the pulley mounted on one of said standards to anchored engagement with said cage, second cable means engaged about selected ones of the multiple sheaves of the multiple-sheave assembly and extending therefrom about the pulley mounted on the other of said standards to anchored engagement with said cage, and power means for effecting a selective vertical movement of said traveling beam, relative to said cross-beam, said first and second cable means, upon a movement of said traveling beam, effecting a corresponding movement of said cage.

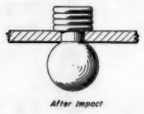
4,262,778

HIGH-ABSORPTION BUMPER DEVICE FOR VEHICLES

Francois Flusin, Paris, France, assignor to Ugine Aciers, Paris, France

PCT No. PCT/FR78/00007, § 371 Date May 2, 1979, § 102(e) Date May 2, 1979, PCT Pub. No. WO79/00124, PCT Pub. Date Mar. 22, 1979.
This PCT application filed May 2, 1979, Ser. No. 49,062
Claims priority, application France, Sep. 2, 1977, 77 27523
Int. Cl.[3] F16D 63/00
U.S. Cl. 188—1 C 13 Claims





1. In a method of progressively absorbing the kinetic energy liberated by the impact of a moving body against an obstacle, the improvement comprising the steps of providing the moving body with an irreversibly plastically deformable generally hollow normally non-rupturing metallic chamber, providing an impact receiving member in impact generated kinetic energy transmitting relation to a generally non-compressible kinetic energy transmitting liquid provided within the metallic chamber, absorbing the kinetic energy of the impact by subjecting the generally non-compressible liquid in the metallic chamber to kinetic energy transmitted thereto by the impact receiving member to outwardly and irreversibly plastically deform the metallic chamber by uniformly subjecting the inner surface of the walls defining the chamber to the force transmitted by the generally non-compressible liquid to outwardly deform the chamber.

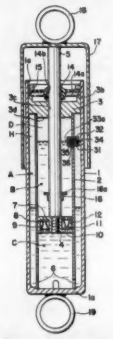
4,262,779

SHOCK ABSORBER WITH RESERVOIR AND WORKING CHAMBER COMMUNICATING STRUCTURE

Teiji Katsumori; Shinji Yokoyama, and Tetuo Kato, all of Kawasaki, Japan, assignors to Tokico Ltd., Japan

Continuation of Ser. No. 674,970, Apr. 8, 1976, abandoned, which is a continuation of Ser. No. 594,041, Jul. 8, 1975, abandoned, which is a continuation of Ser. No. 396,535, Sep. 12, 1973, abandoned. This application Sep. 6, 1977, Ser. No. 830,875
Claims priority, application Japan, Sep. 12, 1972, 47-91523
Int. Cl.[3] F16F 9/06
U.S. Cl. 188—315 1 Claim

1. In a shock absorber and suspension strut unit comprising: an outer cylinder having a closed bottom; an inner cylinder defining an inner chamber rigidly and concentrically secured to said outer cylinder defining therebetween an annular chamber; a damping liquid partially filling said inner chamber and said annular chamber; a movable piston rod; a movable piston connected to said piston rod slidable within and along said inner cylinder, said piston dividing said inner chamber into an upper chamber and a lower chamber; damping force-generating means provided in and on said piston adapted for acting in each of the expanding and contracting strokes of said piston; communication passage means between said lower chamber and said annular chamber for free flow of said damping liquid therebetween; a rod guide stopper means for sealing the passage of said piston rod and stoppering said inner and outer cylinders; and a gas partially filling said upper chamber and said annular chamber defining a first gas-filled chamber above the liquid in said upper chamber generating a first gas-liquid interface, and a second gas-filled chamber above the liquid in said annular chamber generating a second gas-liquid interface, the improvement comprising: an orifice means through said inner cylinder at a predetermined distance below said rod guide stopper means at said first gas-liquid interface when the unit is in the neutral position for maintaining the permanent



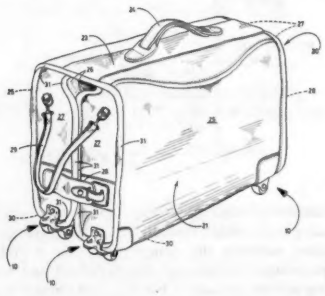
existence of both gas-filled chambers, said first gas-liquid interface being maintained at a predetermined level below said rod guide stopper means thereby maintaining a predetermined volume of said gas in said first gas-filled chamber said orifice means being a check valve for allowing fluid flow from said upper chamber to said annular chamber.

4,262,780

FIXTURE FOR CONVERTING LUGGAGE FOR ARTICULATED MOVEMENT

Richard W. Samuelian, 521 W. Morris Ave., Fresno, Calif. 93704

Filed Dec. 5, 1979, Ser. No. 100,488
Int. Cl.[3] A45C 5/14
U.S. Cl. 190—18 A 1 Claim



1. A fixture for converting for articulated movement luggage or the like, having flexible portions joined by a protruding, transversely extending rib and the flexible portions retaining independent substantially rigid bottom and upright panels in angular relation to each other, the fixture comprising a base having means for mounting the base on the luggage in fixed position relative to the bottom panel thereof; a mount affixed on the base in upstanding relation; and means borne by the mount for securing said upright panel of the luggage on the mount for pivotal movement about an axis substantially parallel to said bottom panel, the mount of the fixture having a channel extending transversely thereof between the base and said axis of movement of the upright panel and the channel

dimensioned slidably to receive the rib to guide said movement of the upright panel.

4,262,781

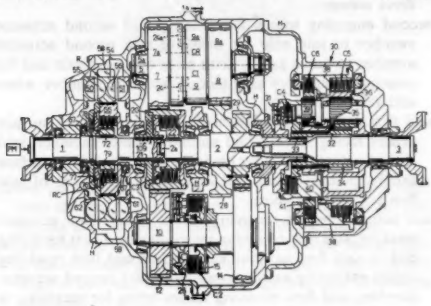
HYDRAULIC RETARDER FOR MULTI-SPEED POWER TRANSMISSIONS

Raymond C. Schneider, Rockford, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Jul. 17, 1979, Ser. No. 58,328

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—4 B **3 Claims**



1. A power transmission for an off-highway truck of the type having a power source and ground wheels driven thereby, said transmission including a fixed housing, power input shaft journalled in said housing and connected to said source and driven thereby, a variable speed gear means connected to said shaft and driven thereby and connected to ground wheels of the vehicle for driving the latter,

a hydraulic coupling retarder mounted within said housing and around said shaft and including a set of stationary vanes fixed to said stationary housing and also including a rotor having a set of rotatable vanes for cooperation with said stationary vanes, said coupling retarder being continuously filled with fluid;

a hydraulic circuit including said hydraulic coupling,

and a hydraulically actuated friction plate type retarder clutch in said circuit and having a first part fixed to said shaft and driven thereby and having a second part fixed to said rotatable vanes for rotatably driving the latter, and interleaved friction plates between said first and second parts and hydraulically actuated between engaged and disengaged positions and for engagement of said retarder rotor;

and control valve means in said hydraulic circuit and connected to said retarder and for directing pressure fluid thereto with variable pressure to consequently cause modulation of the retarding action of the retarder whereby rotation of said shaft is retarded through said hydraulic retarder by being attached to said shaft when said retarder clutch is engaged.

4,262,782

DRIVE SYSTEM

Herbert Kouth, Schoneck, Fed. Rep. of Germany, assignor to Gofra Entwicklungsund Fertigungstechnik G.m.b.H., Rosbach, Fed. Rep. of Germany

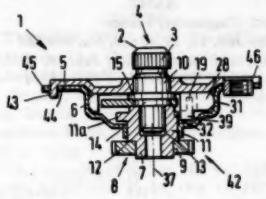
Filed Dec. 6, 1978, Ser. No. 966,941

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756387

Int. Cl.³ F16D *67/00*

U.S. Cl. 192—8 R **16 Claims**

1. A drive system comprising a housing, a two-element drive shaft rotatably supported in said housing, a first element of said drive shaft including a driving member and the second element of said drive shaft including a driven member and a driver on said driven element, coupling means for rotatably coupling said driving member and said driven member for transmitting rotational drive therebetween, and brake means associated with said drive shaft for applying braking force to prevent reverse drive from said driven member to said driving member, said brake means comprising at least one circumferential brake jaw positioned in spaced, facing relation with said housing and having a free end with a radial actuation surface, a freely movable release element positioned adjacent said actuation



surface in spaced relation therewith, said coupling means including an element facing said release element to pivot the same about a radial axis passing through said release element to cause said release element to contact said actuation surface with a circumferentially directed force, said brake jaw being constructed to undergo radial displacement and engage said housing upon application of said circumferentially directed force.

4,262,783

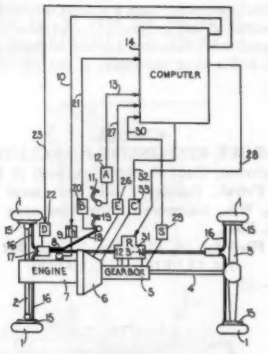
VEHICLE PROPULSION CONTROL SYSTEMS

Gordon G. Scarrott, 34 Pkwy., Welwyn Garden City, Hertfordshire, and Michael J. Underwood, 4 Stanefield, Letchworth, Hertfordshire, both of England

Filed Jul. 31, 1979, Ser. No. 62,282

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.09 **5 Claims**



1. A vehicle propulsion control system for a wheeled vehicle having an engine connectable through a gearbox to at least one road wheel including means to control the rate of supply of fuel to the engine; an accelerator control operable by a driver to indicate a required driving thrust; a braking system having a first control operable by the driver and a further control; and a computer having inputs and outputs, the inputs being connected at least to input transducers on the vehicle respectively arranged to provide current indications of engine speed, extent of operation of the first braking control, extent of operation of the accelerator control and road speed of the vehicle; the outputs being connected to output transducers on the vehicle respectively arranged to actuate the fuel supply means, to

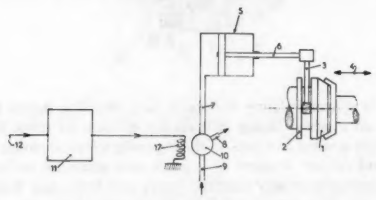
actuate means for selecting gear ratios, including neutral, at the gearbox and to actuate said further control of the braking system to modify braking forces applied to wheels of the vehicle; the computer being responsive to the indications to actuate the output transducing means.

4,262,784

DEVICE WITH A JACK FOR CONTROLLING A GEAR BOX SYNCHROMESH, AND METHOD FOR USING SAME

Jean-Paul Sibeud, Chaponnay, France

Filed Jun. 14, 1974, Ser. No. 479,537
Claims priority, application France, Jun. 18, 1973, 73 23025
Int. Cl.[3] F15B *13/044;* F16D *25/14*
U.S. Cl. 192—52 **6 Claims**



1. A method for controlling a gear box synchromesh, comprising the steps of:

operating a fork, which controls a gear box synchromesh, by means of a pneumatic jack supplied with compressed air, the instantaneous pressure of which is varied during the steps of approach, synchronization proper, and locking of the synchromesh;

modulating the air pressure by means of a three-way valve interposed between the jack and a source of constant pressure compressed air; and

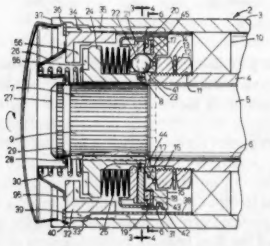
supplying the jack with compressed air according to a pressure law which includes three successive maxima and two successive minima, to wit, a first maximum during the approach step, a first minimum shortly after the beginning of the synchronization step, a second maximum during the synchronization step proper, a second minimum at the end of the synchronization step and the beginning of the locking step, and a third maximum at the end of the locking step.

4,262,785

TORQUE RESPONSIVE HUB CLUTCH

Larry B. Anderson; Clark J. Hamkins, both of Racine, Wis.; Harry A. Petrak, Boulder, Colo., and David V. Schaefer, Burlington, Wis., assignors to The Mechanex Corporation, Englewood, Colo.

Filed Jul. 19, 1978, Ser. No. 926,082
Int. Cl.[2] F16D *11/00, 43/20*
U.S. Cl. 192—35 **27 Claims**



1. In a clutch for engaging a driveable axle journaled in a non-rotatable spindle to a hub concentric with and mounted for rotation about said spindle, a portion of said axle extending axially beyond a terminal end of said spindle, the improvement comprising:

a first actuator member having a central aperture for receiving a portion of said spindle;

first engaging means for affixing said first actuator member to said spindle for preventing rotation of said first actuator member relative to said spindle;

actuator means;

a second actuator member having a central aperture for receiving said axle, said second actuator member having a drive means;

second engaging means for affixing said second actuator member to said axle for enabling said second actuator member to move axially with respect to said axle and for assuring rotation of said second actuator member when said axle rotates;

said first actuator member having a first working surface axially facing toward said second actuator member, said second actuator member having a second working surface axially facing toward said first working surface of said first actuator member;

first actuator means receiving means in said first actuator member, said first receiving means having a first receiving end on said first working surface and said first receiving means extending axially away from said second actuator member, said first receiving means being for receiving at least a portion of said actuator means for enabling said received portion of said actuator means to be axially further away from said second working surface than said second working surface is from said first working surface;

second actuator means receiving means in said second actuator member, said second receiving means having a first receiving end on said second working surface and said second receiving means extending axially away from said first actuator member, said second receiving means being for receiving at least a portion of said actuator means for enabling said portion of said actuator means received within said second receiving means to be axially further away from said first working surface than said second working surface is from said first working surface;

said first receiving means and said second receiving means being alignable for enabling each of said receiving means to simultaneously receive a portion of said actuator means for enabling said first working surface and said second working surface to be relatively axially close together for enabling said drive means on said second actuator member to be out of driving engagement with a hub drive means on said hub when said second actuator member is not forced to rotate with respect to said first actuator member and whereby upon rotation of said second actuator member with respect to said first actuator member said actuator means is forced out of said first and said second receiving means and forced between said first working surface and said second working surface for forcing said second actuator member to slide axially away from said first actuator member along said axle for forcing said drive means into engagement with said hub drive means on said hub for causing said hub to rotate when said axle rotates.

4,262,786

DRIVE COUPLING

Wayne H. Taylor, Mount Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 20, 1978, Ser. No. 971,281
Int. Cl.[3] F16D *13/04*
U.S. Cl. 192—46 **6 Claims**

1. In a device for coupling and uncoupling a driving shaft and a driven shaft activated only by changes in the direction of rotation of the driving shaft, the improvement comprising:

means to rotate said driving shaft;

notches in a portion of said driven shaft;

a first clutch comprising pivotable pawls supported between said driving and driven shafts and having projections engaging said notches and pivotable fingers connected to said driving shaft engaging said pawls to maintain said pawls in engagement with said notches when the driving shaft is rotating in one direction thus providing a driving connection between said shafts;

means permitting said pawls to pivot such that said projections are free of engagement with said notches when said driving shaft is rotated in the other direction; and

recess means in said pawls engagable by said pivotable finger to maintain said projections free of engagement with said notches until said driving shaft is again rotated in said one direction.

4,262,787

ELECTRO-MAGNETIC SPRING-WOUND CLUTCH

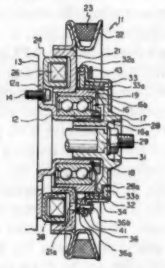
Hideyasu Takefuta, and Toshio Yamaguchi, both of Higashi Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1979, Ser. No. 6,475

Claims priority, application Japan, Mar. 14, 1978, 53-31626[U]

Int. Cl.³ F16D *27/10, 13/08*

U.S. Cl. 192—84 T **9 Claims**



1. An electromagnetic spring-wound clutch comprising:

a rotary input member;

a rotary output member coaxial with the input member;

a rotary clutch disc coaxial with the input member and frictionally engageable therewith;

a coil-wound spring wound around the input member and being connected at its ends to the clutch disc and output member respectively;

an electromagnetic coil which, when energized, attracts the clutch disc into frictional engagement with the input member;

a cover member fixed to the output member and covering the coil-wound spring, the cover member being formed with arcuate slots and the clutch disc being formed with circumferentially spaced holes conjugate to the slots;

double-headed pins extending through the slots and holes respectively;

a resilient annular plate spring disposed between the cover member and heads of the pins which extend external of the cover member; and

a plurality of projecting members fixed to the cover member and engaging with the plate spring, the projecting members resiliently flexing the plate spring so as to urge the clutch disc to disengage from the input member;

the projecting members being made of a harder material than the cover member.

4,262,788

FRICTION MEMBER OF NON-ASBESTOS

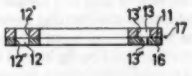
Yasunobu Yamamoto, 22-9, Chiryu; Hiroshi Ban, 8-119, Toyota; Katumi Nakavishi, 150-31, Arimatsuura-Aza, Narumi-cho,, Midori-ku, Nagoya; Ryoichi Tomikawa, 8-119, Nishiyama, Nakane-cho, Toyota; Katumi Nakanishi, 150-31, Nagoya; Ryoichi Tomikawa, 8-199, Toyota, and Toshitake Kato, 114-1, Toyoake, all of Japan

Filed Sep. 29, 1978, Ser. No. 947,102

Claims priority, application Japan, Oct. 14, 1977, 52-123680; Oct. 31, 1977, 52-130404; Feb. 10, 1978, 53-14443

Int. Cl.³ F16D *11/00*

U.S. Cl. 192—107 M **26 Claims**



1. A friction member comprising organic fibers selected from the group consisting of phenolic fibers and plated organic fibers, a binder and a friction filler.

4,262,789

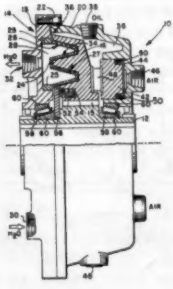
WATER COOLED BRAKE HAVING MIXED BOUNDARY CONTACT BETWEEN THE TORQUE TRANSMITTING SURFACES

Marcus H. Collins, Akron, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 30, 1979, Ser. No. 34,235

Int. Cl.³ F16D *13/74, 25/064*

U.S. Cl. 192—113 B **16 Claims**



1. A coupling comprising a driving member, a driven member rotatable relative to said driving member about an axis of rotation, first and second torque transmitting members, one of said driving and driven members having said first torque transmitting member attached thereto for movement therewith and the other of said driving and driven members having said second torque transmitting member attached thereto for movement therewith, said first and second torque transmitting members having an engaged position establishing a driving relationship between said driving and driven member and a disengaged position permitting relative rotation between said driving and driven members, actuating means for moving one of said first

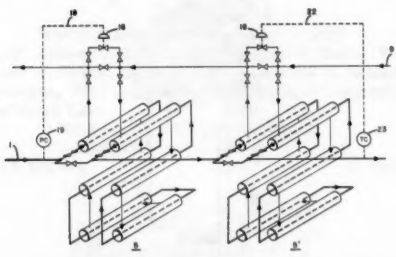
and second torque transmitting members relative to the other of said first and second torque transmitting members to effect movement of said first and second torque transmitting members from said disengaged position to said engaged position, said first torque transmitting member having a first surface which is adapted to engage with said second torque transmitting member when said first and second torque transmitting members are in said engaged position and a second surface disposed remote from said first surface, said first and second torque transmitting members generating heat in said second torque transmitting member and at said first and second surfaces of said first torque transmitting member when in said engaged position, first fluid passageway means for providing for the flow of cooling fluid therethrough, said first fluid passageway means communicating with said second surface of said first torque transmitting member to direct cooling fluid to engage with said second surface to effect cooling of said first and second surfaces of said first torque transmitting member, second fluid passageway means communicating with said first surface of said first torque transmitting member and said second torque transmitting member and providing for the flow of lubricating fluid therethrough, said second fluid passageway means directing lubricating fluid to said first surface of said first torque transmitting member and to said second torque transmitting member to provide for a mixed boundary contact between said first surface of said first torque transmitting member and said second torque transmitting member when said first and second torque transmitting members are in said engaged position, said lubricating fluid being heated by said heat generated at said second torque transmitting member and in said first surface of said first torque transmitting member when said first and second torque transmitting members are in said engaged position said cooling fluid cooling said first and second surfaces of said first torque transmitting member to effect cooling of said lubricating fluid which engages said first surface of said first torque transmitting member.

4,262,790

SYSTEM FOR SEPARATING PARAFFIN FROM OIL IN REFINERIES

Alfonso Castiglione, Via G. D'Annunzio, 7, 34015 Muggia (TS), Italy

Filed Nov. 16, 1979, Ser. No. 94,712
Claims priority, application Italy, Apr. 13, 1978, 83366 A/78
Int. Cl.³ C10G *73/32, 73/34*
U.S. Cl. 196—14.5 **4 Claims**



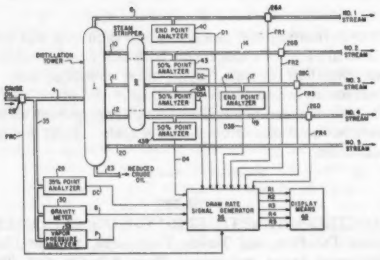
1. Apparatus for removing paraffin from a charge oil to be treated and for automatically controlling the process of cooling in known type heat exchangers in which a refrigerant liquid delivers cold to the charge oil to cool it for the required separation, and where the refrigerant liquid is generally the recovery oil stemming from treatment of the charge oil, comprising a heat exchanger having an inlet and an outlet for the flow of charge oil therethrough, and an inlet and an outlet for the flow of cooling recovery oil therethrough; a pressure sensor connected to said charge oil inlet and having an output for providing a sensible manifestation representative of said charge oil pressure at said charge oil inlet; a control valve connected between said recovery oil inlet and outlet in bypass flow relating to said heat exchanger, said control valve having a control input responsive to said sensor sensible manifestation for regulating oil therethrough; and means for coupling said sensor sensible manifestations to said control input; whereby an increase in charge oil flow rate causes a decrease in recovery oil flow rate through said control valve, and a decrease in charge oil flow rate causes an increase in recovery oil flow rate through said control valve.

4,262,791

DRAW RATE SIGNAL GENERATOR

Charles R. Lynch, Port Neches; Charles W. Harrison, and William D. White, both of Nederland, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,347
Int. Cl.³ B01D *3/42;* **G06F** *15/46;* **G06G** *7/58*
U.S. Cl. 196—132 **22 Claims**



1. A draw rate signal generator for an atmospheric crude distillation unit receiving crude oil and providing removed product streams **1** through **5** and a reduced crude oil comprises flow rate sensing means for sensing the flow rates of the crude oil and of streams **1** through **4** and providing signals FRC, FR1, FR2, FR3 and FR4, respectively, corresponding thereto; analyzing means for sampling the crude oil entering the distillation unit and providing signals DC, G and P corresponding to the 35% point temperature, the API gravity and the vapor pressure of the crude oil; end point analyzer means sampling streams Nos. **1** and **3** and providing signals D1 and D3B, respectively, corresponding to the end points temperatures of streams Nos. **1** and **3**, respectively; 50% point analyzer means sampling streams **2**, **3** and **4** and providing signals D2, D3A and D4, respectively, corresponding to the 50% point temperatures of streams Nos. **2**, **3** and **4**, respectively; and draw rate signal means connected to the flow rate sensing means, to the crude analyzing means, to the end point analyzing means and to the 50% point analyzing means for providing signals R1 through R5 corresponding to the draw rate for streams Nos. **1** through **5**, in accordance with signals from the sensing means and all the analyzing means.

4,262,792

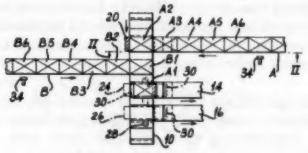
DISTRIBUTING STREAMS OF ARTICLES

Robert W. Davies, London, England, assignor to Molins Limited, London, England

Filed Apr. 30, 1979, Ser. No. 35,021
Int. Cl.³ B65G *47/00*
U.S. Cl. 198—348 **5 Claims**

1. A conveyor system for distributing the output of articles from two sources uniformly among two input tracks, comprising an indexable conveyor adapted to move between rest periods in indexing steps greater than the width of the articles, means for feeding successive articles from said two sources onto said indexable conveyor whereby said articles are merged into a single row wherein adjacent articles on said conveyor are from alternate sources, first and second input tracks leading from the conveyor downstream of said two sources, said sec-

ond track being spaced downstream of said first track by at least one indexing step, first and second pusher means associated with said first and second tracks respectively for transferring articles from said conveyor to the respective track, said second pusher means being spaced downstream of said first pusher means by a distance equal to the distance between said



input tracks, and means for controlling said first and second pusher means so that for every four indexing steps of said conveyor each pusher means is only actuated after each of two successive indexing steps and said first and second pusher means are actuated out of phase such that said second pusher means leads said first pusher means by one indexing step so that articles are distributed uniformly among the two input tracks.

4,262,793

ARRANGEMENT FOR COUNTING AND APPORTIONING OF ROD-SHAPED UNI-DIRECTIONALLY ORIENTED GOODS, IN PARTICULAR ELECTRODE RODS

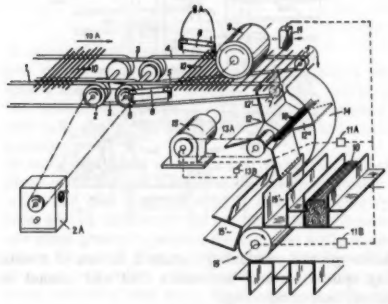
Bertram Hebenstreit, Kapfenberg, Austria, and Vereinigte Edelstahlwerke Aktiengesellschaft, 03, Vienna, Austria

Continuation of Ser. No. 919,146, Jun. 26, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,438

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728733

Int. Cl.³ B65G *47/26*

U.S. Cl. 198—424 **9 Claims**



1. An arrangement for counting and apportioning of rod-like goods to be packaged, in particular electrode rods, comprising in combination:

substantially horizontally arranged conveyor belt means having a rod feeding end and adapted to transport rod-like goods along a predetermined conveying path to said rod feeding end;

a paddle wheel rotatably mounted below said conveyor belt means for coaction with said conveying path through which there are transported said rod-like goods on said conveyor belt means;

said paddle wheel having a plurality of paddles;

counting means operatively associated with said conveyor belt means for emitting a pulse each time a rod-like good moves past said counting means;

means for indexing said paddle wheel in response to a predetermined emitted pulse of said counting means in order to cyclically rotate said paddle wheel;

one of the paddles of said paddle wheel being located in a position immediately below the conveying path of said conveyor belt means in readiness for extending into said conveying path in response to said predetermined emitted counting pulse, in order to thereby move into said conveying path to carry out a separation function of the last counted rod-like good at said conveying path, of a predetermined portion of said rod-like goods, prior to said last counted rod-like good being released from said rod feeding end of said conveyor belt means; and

means having at least one receiving compartment disposed beneath said paddle wheel for receiving the counted predetermined portion of rod-like goods.

4,262,794

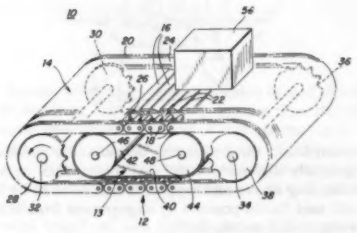
CONVEYOR ACCELERATOR SYSTEM

Ronald D. Bourgeois, 38 Ellison Park, Waltham, Mass. 02154

Filed Apr. 30, 1979, Ser. No. 34,585

Int. Cl.³ B65G *47/28*

U.S. Cl. 198—459 **1 Claim**



1. Conveyor apparatus comprising a main roller conveyor having first and second sets of first and second rotatable rollers; and a roller accelerator system including an accelerator drive disposed proximate said main conveyor; said accelerator drive including a first section proximate said first set of rollers and a second section proximate said second set of rollers, and first and second drive shafts, said first section including first drive means fixed to said first shaft, second drive means rotatable on said second shaft, and first drive belt means mounted on said first and second drive means; and said second section including third drive means rotatable on said first shaft, fourth drive means fixed to said second shaft, and second drive belt means mounted on said third and fourth drive means; and actuator means for moving said accelerator drive into driving contact with said rollers of said main conveyor to vary the peripheral speed of the surface of said rollers relative to the speed of said main conveyor.

4,262,795

GRIPPER APPARATUS AND METHOD OF GRIPPING CONTAINERS

Michael Hecker, Santa Barbara, Calif., assignor to Industrial Automation Corp., Goleta, Calif.

Filed Jun. 2, 1978, Ser. No. 912,095

Int. Cl.³ B65G *47/86;* B66C *1/10*

U.S. Cl. 198—479 **11 Claims**

1. In a container handling apparatus, a container gripper comprising:

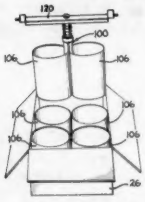
a support means having a generally vertically disposed longitudinal opening therein;

first and second gripping members disposed in a generally vertical disposition and pivotally supported adjacent the upper end thereof by said support means, said gripping members having generally facingly disposed surfaces

adjacent their lower end for gripping the walls of two containers therebetween, said gripping members being rotatable between a first position whereby the lower ends of said gripping members are encouraged into closer proximity to be closeable against a wall of one of said two containers and an adjacent wall of the other of said two containers therebetween to clamp two containers together and grip them between said gripper members and a second position not engaging container walls, said gripping members having first and second ends;

spring means for encouraging said gripping members to said first position;

an elongate, generally vertically disposed actuator member extending downward between said first and second gripping members, said actuator member being moveable in a vertical direction between an upper third position and a lower fourth position, said actuator member being a means for contacting the top edges of containers and moving



toward said third position, said actuator member being generally disposed within said longitudinal opening and extending above said support means so as to be forceable into said fourth position by engagement from above with a depression means; and

over-center toggle means, said toggle means being coupled between said first and second gripping members and said actuator member, said toggle means being a means for allowing said first and second gripping members to be moved by said spring means toward said first position as said actuator member moves toward said third position, and for locking said actuator member at said fourth position and said first and second gripping members at said second position by the over-center action of said toggle means, whereby said first and second gripping members will snap to said first position and said actuator member to said third position as said actuator is encouraged to move from said fourth position.

4,262,796

CONVEYOR CHAIN AND TROLLEY ASSEMBLY

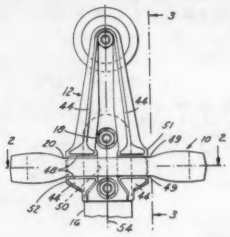
Clayton C. McDonald, Howell, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Feb. 9, 1979, Ser. No. 11,036
Int. Cl.[3] B65G *17/32*
U.S. Cl. 198—687 **8 Claims**

1. In a conveyor chain and trolley assembly consisting of a chain center link having pairs of side and end portions symmetrically formed about longitudinal and transverse center lines and defining an open central portion, a pair of trolley brackets each having a base portion, and an attachment member mounted between and connected to the base portions of the pair of trolley brackets, at least one of the elements—consisting of the base portions of the pair of trolley brackets as an element and the attachment member as another element—extending through the open central portion of the center link and having transversely projecting shoulders engaging the side portions of the center link, the improvement wherein:

each of the pair of side portions of the center link is provided with one of a pair of bosses, said bosses projecting from the pair of side portions into the open central portion, said bosses being located medially longitudinally of the center link and having parallel inner faces opposed to each other in spaced relation transversely of the center link; and,

recess means complementing said bosses are provided on



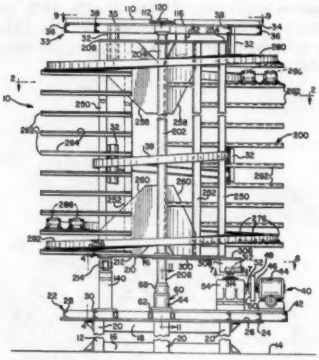
one of said elements for interlocking the center link therewith when said elements are connected, said recess means being located medially between the side edges of said one element.

4,262,797

RECIPROCATING STORAGE UNIT

Henry A. Schuricht, Pontiac, and Kenneth F. Scheffer, Ann Arbor, both of Mich., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed May 8, 1978, Ser. No. 903,951
Int. Cl.[2] B65G *27/02, 25/00, 13/02*
U.S. Cl. 198—756 **2 Claims**



1. A storage unit particularly adapted for use in a material handling system located between a first and second work station, said unit comprising,

a support frame,

drive means carried by said frame and including an eccentric camming means to produce a reciprocation movement,

a plurality of support bearing assemblies carried in a circular array by said support frame, each said assembly having a flat upper support surface elevationally adjustable to allow said upper support surface to be positioned proximately aligned in a horizontal plane,

an elongated vertical shaft having a lower end rotatively carried by said support frame,

a storage structure having a cylindrical configuration, said structure supported by said shaft and having a cam guide means operatively connected to said camming means,

a plurality of roller means carried on an underside of a lower plate of said storage structure, said means aligned with said plurality of said support bearing assemblies respectively and supportively engaged by such, and

a spiral-shaped guide path carried within said storage structure and defined by spaced sidewalls and roller means projecting inwardly from each said sidewall to form a supportive and near friction-free base, said guide path having an upper entrance to receive said parts and a lower discharge point for discharging said parts, said guide path being selectively downward sloped to impart a slight near constant gravitational moving force on said parts to promote movement of said parts between said entrance point and said discharge point, said slope of said path being insufficient to impart sustained independent movement of said parts,

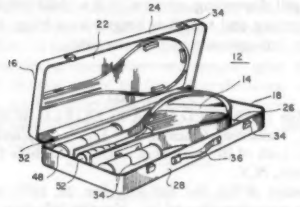
wherein said drive means reciprocates said storage structure and said guide path to impart to said parts a moving force where when combined with said gravitational moving force causes movement of said parts from said inlet point for accumulation in a damage-resistant manner adjacent to said discharge point for selective release to said second work station.

4,262,798

CARRYING CASE

Clifford G. Raab, Huntington Beach, Calif., assignor to Michael K. Lewin, Manhattan Beach, Calif., a part interest

Filed Mar. 17, 1977, Ser. No. 778,572
Int. Cl.[3] A45C *11/24;* **B65D** *85/00*
U.S. Cl. 206—315 R **2 Claims**



1. A carrying case comprising:

a pair of opposed base members each having a parallel spaced apart wall when said case is closed, and lip members formed in planes intersecting said walls respectively, said walls and said lip members defining an enclosed compartment; and

a rib member secured to one of said walls and formed in a plane perpendicular thereto and abutting said other wall when said case is closed, said rib member being spaced from said lip member in the interior of said compartment in a plane generally parallel thereto, said walls containing ridges formed in planes perpendicular to said walls, said ribs and said ridges extending beyond the plane of the outer surface of said walls, the edges of said rib member being positioned in said ridges.

4,262,799

SUPPORT POST BODY

Thomas R. Perrett, Bala Cynwyd, Pa., assignor to Synthes AG, Chur, Switzerland

Filed Aug. 7, 1979, Ser. No. 64,534
Int. Cl.[3] B65D *82/00;* **A61L** *2/00, 9/00*
U.S. Cl. 206—363 **3 Claims**

1. In a medical device sterilization case which is adapted to support a medical device during sterilization and which includes an apertured bottom plate, a top wall disposed in spaced relationship above said bottom plate and at least one integral support post body disposed in mounted relation with an aperture of said bottom plate, the improvement comprising

1. said aperture being circular,

2. said support post body comprising

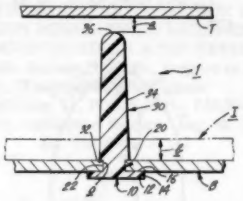
a. a disk-shaped base whose maximum transverse dimension is greater than the maximum transverse dimension of said aperture;

b. a reduced diameter, cylindrical neck comprising a cylindrical side wall having a diameter approximately equal to the diameter of said aperture and a height approximately equal to the thickness of said bottom plate; and

c. a generally frusto-conical tip comprising

i. an extended frusto-conical side wall which extends upwardly in a direction away from said neck and inwardly and

ii. a convex top wall provided with a transverse peripheral configuration which conforms to and merges with the upper extremity of said side wall,



iii. the maximum transverse dimension of said side wall at its lower extremity being greater than the maximum transverse dimension of said aperture and

iv. the maximum transverse dimension of said side wall at its upper extremity being less than or equal to the corresponding transverse dimension of said aperture, and

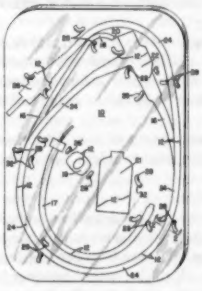
3. the axial length of said body being sufficient that the clearance between the undersurface of the top wall of the case and the upper extremity of the top surface is less than the vertical dimension of a medical device to be supported by said body.

4,262,800

STERILIZABLE HOLDER FOR FIBER OPTIC SURGICAL UNIT OR THE LIKE

Henry W. Nethercutt, Huntington, W. Va., assignor to KEB Industries, Huntington, W. Va.

Filed Aug. 9, 1979, Ser. No. 65,215
Int. Cl.[3] B65D *73/00, 85/00, 65/16*
U.S. Cl. 206—364 **2 Claims**



1. A sterlizable holder for a fiber optic surgical unit or the like comprising: a flat, horizontal uniplanar base structure constructed of a transparent plastic material; a visually perceived outline of the unit etched on said base on a side thereof opposite that upon which the unit is placed for accurate location of the unit on said base in a predetermined arrangement; a plurality of generally vertically oriented retainer pegs on said

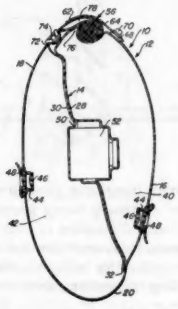
base arranged in predetermined paired fashion about said outline; and elastic retainer means adapted to be stretched and slipped over each set of paired pegs to removably secure the unit on said base, the free distal end of each of said pegs being bent outwardly with respect to said outline to assure secure retention of said elastic retainer means over said each set of retainer pegs, all components of said holder being constructed of materials capable of withstanding a gas sterilization process at temperatures up to 135° F.

4,262,801

CONTAINER FOR FRAGILE ARTICLES

John R. Avery, 523 Detroit St., Denver, Colo. 80206

Filed Mar. 24, 1977, Ser. No. 780,714
Int. Cl.³ B65D *30/08, 85/38*
U.S. Cl. 206—522 **12 Claims**



1. A container for fragile articles, comprising:

an outer container body of flexible material composed only of first and second, forward and rear, walls constituting the outer walls of the container, the walls being sealingly connected directly to each other at the bottom and at the side margins of the container and open at the upper end of the container;

and an inner container body of flexible material composed only of first and second, forward and rear, walls sealingly connected directly to each other at the bottom and at the side margins and open at the upper margins to provide a storage compartment for reception of articles to be protected;

the side margins of the inner container body being sealingly connected directly to the side margins of the outer container body;

the upper margins of the forward and rear walls of the inner container body being sealingly connected to the upper portions of the respective forward and rear walls of the outer container body below the top of the outer container body;

and the bottom margin of the inner container body being sealingly connected to at least one of the outer walls of the container;

and fastener means on the upper portions of the outer walls of the container to hold the free ends in adjacency;

the inner and outer container bodies cooperating to define a first inflation chamber between the inner container body and a first wall of the outer container body and a second inflation chamber between the inner container body and the second wall of the outer container body, with the inner container body serving as a partition to prevent flow of air between the two chambers;

and a valved air flow port in each outer wall for independent inflation of each of the chambers;

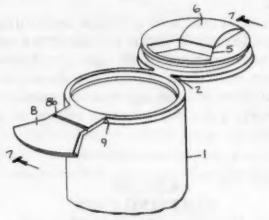
the chambers being inflatable to form air cushions pressing toward each other to force the major portion of the air out of the storage compartment and cause its walls to conform to and grip a stored article.

4,262,802

PACKAGING AND DISPENSING PILL BOX

Robert H. Laauwe, Franklin Lakes, N.J., assignor to Essex Chemical Corporation, Clifton, N.J.

Filed Aug. 3, 1979, Ser. No. 63,432
Int. Cl.³ B65D *83/04, 85/56*
U.S. Cl. 206—540 **3 Claims**



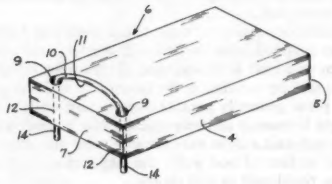
1. A packaging and dispensing pill box having an open top, a lid hinged by a hinge to one side of the box for closing the top, means inaccessible from the outside of the box and lid for locking the lid against reopening after the lid is closed, the lid having a pill dispensing opening, and a child-resistant closure for the opening and which is hinged by a hinge to the other side of the box opposite to said one side.

4,262,803

BAGS WICKETED ON A FLEXIBLE BINDING

Joseph A. Nausedas, Chicago, and Harry P. Eichin, Western Springs, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 808,310, Jun. 20, 1977, abandoned, which is a continuation of Ser. No. 698,847, Jun. 23, 1976, abandoned, which is a continuation of Ser. No. 516,240, Oct. 18, 1974, abandoned. This application Jan. 29, 1979, Ser. No. 7,180
Int. Cl.³ B65D *1/34, 6/04*
U.S. Cl. 206—554 **9 Claims**



1. A package article comprising, in combination,

a stack of flattened flexible packaging sheets, each sheet having two wicket holes therethrough, said wicket holes being in substantial registration with the wicket holes in respectively contiguous sheets in the stack,

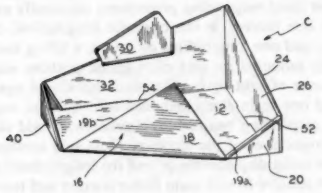
an elongate flexible binding member extending through the wicket holes in the stacked sheets to form a hand grippable loop between the wicket holes of the topmost sheet of the stack, said loop being severable, and, when severed, forming upwardly extending free-ended flexible wicket elements holding said sheets in readiness for one at a time removal, and a shank extending from each of the wicket holes in the bottommost sheet of the stack, and

means on each said shank to retain the sheets on the binding member prior to the severing of said flexible binding member hand grippable loop.

4,262,804
DISPLAY CONTAINER

Bennie C. Nelson, Jr., Romeoville, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jun. 15, 1979, Ser. No. 48,978
Int. Cl.[3] B65D *1/34*
U.S. Cl. 206—561 4 Claims



1. A tray-type display container, formed of a unitary blank of foldable sheet material such as paperboard, for holding a plurality of articles such as books and binders in various positions to afford views of such articles from various angles, comprising:

(a) a bottom wall;

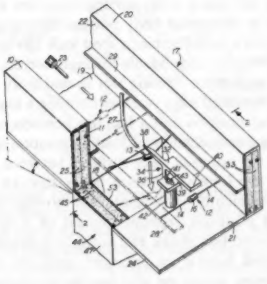
(b) a corner post member of generally triangular shape upstanding from said bottom wall and projecting into said container to present a pair of generally vertical interior walls disposed in intersecting planes;

(c) a plurality of vertically disposed side walls upstanding from said bottom wall and being foldably joined to each other, two of said side walls being disposed substantially perpenticular to each other and spaced apart from said pair of interior walls to form therebetween with said bottom wall a substantially L-shaped interior area for holding and displaying articles which are disposed in variour vertical planes.

4,262,805
DISTINGUISHING ELONGATED ARTICLES ACCORDING TO THEIR SHAPE

Kristen E. Bankes, Reading; Carl H. Herman, Fleetwood; Anderson F. Johnson, Jr., Sinking Spring, and Donald M. Large, Temple, all of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 9, 1979, Ser. No. 65,031
Int. Cl.[3] B07C *9/00*
U.S. Cl. 209—656 20 Claims



1. A method of distinguishing elongated articles having a first shape from elongated articles having a second shape, comprising:

orienting the elongated articles transverse to a longitudinal guiding means such that the oriented articles present distinctive configurations of the first and second shapes when viewed against a plane transverse to the guiding means;

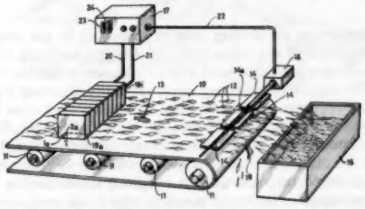
advancing the articles in succession along the guiding means such that the configurations of the first and second shapes thereby form substantially parallel pathways; and

interposing at least one member in a resultant space between such parallel pathways to separate and therefore to distinguish the articles according to their shape.

4,262,806
AUTOMATIC DETECTION AND REJECTION OF FOREIGN BODIES FROM VEGETABLES TRANSPORTED ON A CONVEYOR

Henri J. J. Drabs, Brabant, Belgium, assignor to Elbicon Electronics PVBA, Winksele-Herent, Belgium

Filed Aug. 11, 1978, Ser. No. 932,894
Claims priority, application Belgium, Aug. 18, 1977, 857904
Int. Cl.[3] B07C *5/342*
U.S. Cl. 209—577 10 Claims



1. An apparatus for separating foreign bodies from vegetables being transported on a conveyor, the system comprising,

(a) a transmitter for directing infra-red radiation at the conveyor,

(b) a receiver for receiving the infra-red radiation reflected by the vegetables and foreign bodies being carried by the conveyor, the receiver producing an output signal proportional to the reflected infra-red radiation, so that the output signal corresponding to radiation reflected from a vegetable is different from the output signal corresponding to radiation reflected from a foreign body,

(c) an automatic gain control circuit to which the output signal from the receiver is applied, the circuit producing a predetermined output signal in response to the output signal from the receiver corresponding to radiation reflected from a vegetable, said predetermined output signal remaining constant despite relatively slow changes in amplitude of the output signal from the receiver, and the circuit producing a different output signal in response to a relatively rapid change in the output signal from the receiver corresponding to radiation reflected from a foreign body,

(d) comparator means for comparing the output signal from the automatic gain control circuit with at least one reference level, the comparator means producing no output signal in response to the predetermined output signal from the automatic gain control circuit, but the comparator means producing an output signal in response to a different output signal from the circuit having a level beyond the reference level, and

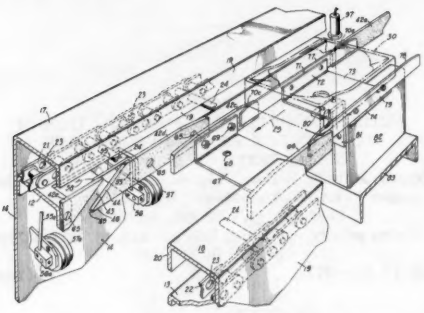
(e) ejection means responsive to output signals from the comparator means for separating foreign bodies from the vegetables.

4,262,807

PROCESS AND APPARATUS FOR WEIGHING AND SORTING ARTICLES

William H. Leverett, Greenville, Ga., assignor to Durand-Wayland, Inc., LaGrange, Ga.

Continuation-in-part of Ser. No. 963,581, Nov. 24, 1978. This application Sep. 27, 1979, Ser. No. 79,429
Int. Cl.[3] B07C 5/16
U.S. Cl. 209—592 14 Claims



1. Apparatus for sorting articles according to the weight of each article, said apparatus being of the type having a continuous conveyor provided with spaced transverse successive tow bars for respectively towing cups, pivotally attached by their forward portions to said tow bars, through a load zone where the cups are respectively provided with articles therein and such loaded cups are thereafter towed through a weigh zone where the individual loaded cups are successively weighed by a weigh supporting surface of a weighing means and to subsequent successive discharge zones in which selected cups supported by support and release means are released in selected discharge zones by said support and release means so as to discharge said articles in the selected discharge zone according to the weight thereof detected in said weigh zone, the improvement comprising:

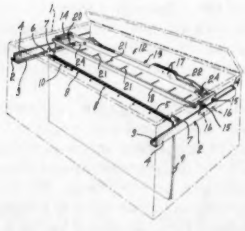
said cups each being provided with means for supporting that cup independently of its associated tow bar and solely on said weighing means while such cup, with its article, is weighed by said weighing means.

4,262,808

APPARATUS FOR STORAGE AND SELECTION OF SUSPENDED SHEETS

Joseph L. Laporte, 420 E. Principale St., Saint-Ambroise de Kildare, Quebec, Canada

Filed Apr. 12, 1979, Ser. No. 29,443
Int. Cl.[3] A47B 63/00; A47F 7/16
U.S. Cl. 211—46 5 Claims



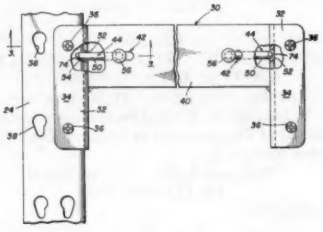
1. A storage and selection apparatus for suspended sheets and comprising a pair of parallel guideways laterally spaced apart by a storage space for suspended sheets, a carriage extending over said storage space and having opposite sides engaging said guideways and displaceable along the latter, a plurality of main elongated racks extending lengthwise transversely of the guideways, having opposite ends operatively movable on the guideways respectively and having sheet suspending projections outwardly extending from one side of the racks in one longitudinal direction of said guideways, said carriage including a main frame portion and an auxiliary elongated rack extending lengthwise transversely of the guideways and having sheet suspending projections outwardly extending from one side thereof in the opposite longitudinal direction relative to said one longitudinal direction, a lifting mechanism operatively mounted on said main frame portion, selectively engaging one of said main elongated racks, and operatively lifting said one main elongated rack into endwise registry of the sheet suspending projections thereof with said sheet suspending projections of the auxiliary rack, said auxiliary elongated rack being displaceable to and fro longitudinally of said guideways relative to said main frame portion and toward and away relative to abutment of the projections thereof with the projections of said one main elongated rack, and an acutating mechanism operatively mounted on said main frame portion, connected to said auxiliary elongated rack, and operatively displacing the latter toward said abutment of the projections thereof with the projections of said one main elongated rack, whereby suspended sheets may be slided onto the projections of the auxiliary rack from the projections of said one main rack, and vice versa.

4,262,809

SLOTTED BEAM AND LOADLOCK THEREFOR

Kennedy McConnell, Flossmoor, Ill., assignor to Interlake, Inc., Oak Brook, Ill.

Filed Oct. 13, 1978, Ser. No. 951,183
Int. Cl.[3] A47F 5/00
U.S. Cl. 211—192 18 Claims

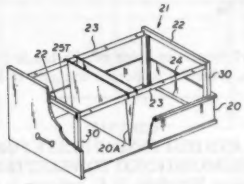


1. A beam for use in a supporting structure comprising in combination, an elongated body portion having at one end an end flange with a hole therein, a load lock having a bolt with a shank aligned with and slidable through said end flange hole, a contoured movement-limiting slot in said body portion, said slot having contoured edge surfaces defining a loading position and a shipping position and a locking position, said shipping position being intermediate said loading position and said locking position, the opposed edge surfaces between the shipping position and the locking position being straight and parallel and spaced sufficiently close to prevent movement of said bolt between said positions without the aid of a tool, a handle integral with said bolt shank and extending through said contoured slot and having an enlarged head on the free end thereof, retaining means on said handle for preventing withdrawal thereof from said slot during axial sliding movement of said handle in said slot among the three positions thereof, and resilient means on said handle slidably engaging the edge surfaces of said contoured slot to retain said handle in a selected one of said loading position and said shipping position and said locking position, whereby said shank end is variably positioned in the end flange hole.

4,262,810
FRAME STRUCTURE AND METHOD OF MAKING SAME

Daniel F. Ilich, 149-44 Cherry Ave., Flushing, N.Y. 11255

Filed Jul. 17, 1978, Ser. No. 924,984
Int. Cl.³ B42F *15/00*
U.S. Cl. 211—206 **17 Claims**



1. A frame support adapted to be readily assembled between a knock down position and an assembled operative position comprising:

a pair of similarly formed elongated members formed of a structural readily bendable material when in the knock down position and bent to define a generally inverted U-shaped end support in the assembled position of said frame,

each of said members having a generally U-shaped notch located in spaced apart intervals intermediate the length thereof, whereby the distance between said notches determines the width of the end support in the assembled position,

said notches being opened to one side of said members,

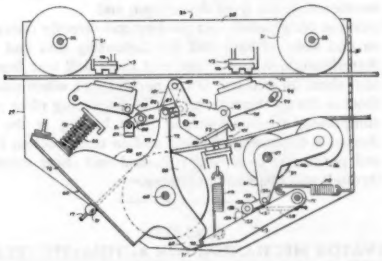
a pair of opposed side rails of a predetermined length,

and means about which said member is bent whereby said notch defines an end grip for said side rails extended between said end supports in the assembled position.

4,262,811
LOG CARRIER

Marvin Montague, Box 122, Clark Fork, Id. 83811

Filed Oct. 30, 1979, Ser. No. 89,502
Int. Cl.³ B66C *21/00*
U.S. Cl. 212—87 **18 Claims**



12. A carriage for operation in highline logging along a highline extending suspended from a yarder at a landing and an anchor point along a hillside spaced from the landing for guiding a mainline from a mainline winch on the yarder, said mainline having an abutment at a free end thereof, comprising:

a carriage frame;

highline sheave means on the frame for suspending the carriage frame from the highline for free movement along the length of the highline between the yarder and anchor point;

mainline sheave means on the carriage frame for engaging and guiding the mainline through the carriage frame;

highline clamp means selectively movable to a first position clamping the highline securely to the carriage frame and to a second position releasing the highline for free movement on the carriage frame;

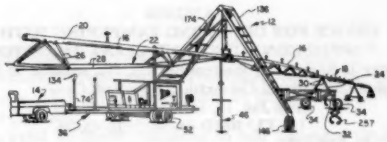
mainline clamp means on the frame for selectively moving between a first position free of the mainline and a second position clamping the mainline securely to the carriage frame; and

actuator means selectively operable through the mainline winch to (a) cause the highline and mainline clamp means to move to their respective first positions, and to (b) cause the highline and mainline clamp means to move to their respective second positions in response to tension applied along the mainline between the carriage frame and in response to forcible movement of the abutment toward the yarder and against the actuator means.

4,262,812
TOOL APPARATUS FOR SPRINKLER SYSTEMS

John P. Bremenkamp, Rte. 2, Colby, Kans. 67701

Filed Apr. 10, 1978, Ser. No. 895,248
Int. Cl.³ B66C *1/42, 3/00*
U.S. Cl. 212—243 **10 Claims**



1. A tool apparatus used to assemble and disassemble a plurality of pipe members of an irrigation sprinkler system used for commercial crop production, comprising:

(a) a basic support means having a support bed assembly mounted on a support wheel assembly so as to be readily mobile;

(b) a tower support means mounted on said basic support means;

(c) a collapsible tower means pivotally connected to said tower support means and movable from a transport position overlying said support bed assembly to a usage position extended laterally of said support bed assembly;

(d) said tower means includes a tower assembly operable to straddle the pipe members when in the usage position in order to work and elevate the pipe members of the sprinkler system;

(e) said tower support means includes a basic support frame secured to said support bed asssembly, and a tower support frame secured to said basic support frame;

(f) said basic support frame includes a pair of interconnected channel members providing a horizontal plane to receive a portion of said tower means therein,

(g) said tower support frame includes a vertical support post at the junction of said channel members and a main support channel pivotally connected to said support post;

(h) said tower assembly pivotally connected to said main support channel; and

(i) said main support channel and interconnected said tower assembly movable from the transport position over one of said channel members to the usage position over the other channel member.

4,262,813
BOTTLE CLOSURE

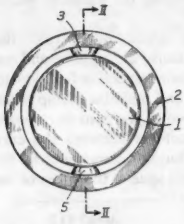
Jacques Augros, Villiers le Bel, France, assignor to Arts et Techniques Nouvelles, Paris, France

Filed Oct. 16, 1979, Ser. No. 85,211
Claims priority, application France, Oct. 17, 1978, 78 29562
Int. Cl.³ B65D *41/02*
U.S. Cl. 215—12 R **8 Claims**

1. In combination:

a single bottle having an opening and a bottom opposite the opening:

a ring shaped frame, said bottle being within said frame;



said ring shaped frame having on the inside thereof a sealing projection engaging said opening, and having a resilient projection diametrically opposite said sealing projection for urging said bottle against said sealing projection.

4,262,814

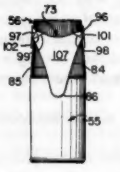
DEVICE FOR DETECTING TAMPERING WITH A CAPPED CONTAINER AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 18, 1979, Ser. No. 49,154

Int. Cl.[3] B65D *85/54, 5/02, 65/06*

U.S. Cl. 215—232 **42 Claims**



1. A device for detecting tampering with a cap on a container, the combination comprising:

a harness received on the cap;

two legs, each forming an extension on opposite sides of said harness;

said harness and legs being formed of tearable material; and

means for securing said legs tightly against opposed sides of the container and for securing said harness tightly against the cap so that upward movement of the cap tears said device,

said harness having means defining at least one aperture therein permitting protrusion of a part of the cap through said harness, said means including a central area on said harness having a pair of opposed side edges, at least a portion of said one aperture therein, and a first pair of fold lines, one of said fold lines extending from said one aperture to the other of said central area side edges.

4,262,815

CONICAL CAN END WITH A GATE AND OPENING TAB AT THE CONE APEX

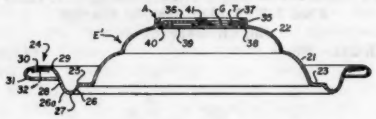
Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Filed Mar. 10, 1980, Ser. No. 128,582

Int. Cl.[3] B65D *17/34, 17/32*

U.S. Cl. 220—273 **11 Claims**

1. A conical can end wherein the central panel of the end is drawn to form a cone-like frustum with the apex end thereof constituting an aperture, a gate panel recessed below the crest of the aperture closing the same, a score cut in the gate panel to outline a gate and a tab lying in the aperture recess, attached to the gate and being adapted to rupture the score cut by a



lever action whenever an edge of the tab is lifted from the aperture recess, whereby to permit the gate to be opened.

4,262,816

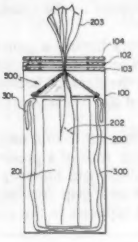
CONTAINER AND DISPENSING PLATE FOR A ROLL OF PREMOISTENED TOWELETTES

Herman Margulies, Westfield, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 950,616, Oct. 12, 1978. This application May 14, 1979, Ser. No. 38,780

Int. Cl.[3] A47K *10/38*

U.S. Cl. 221—46 **21 Claims**



1. A package for dispensing a continuous roll of premoistened perforated sheets, said package comprising:

a container for containing therein a continuous roll of premoistened perforated sheets;

bag means within said container and surrounding said roll for containing said roll therein and preventing said premoistened sheets from drying out; and

dispensing plate means surrounding and directly contacting an end sheet of said roll for dispensing said end sheet therethrough, whereby said end sheet will tear from the next sheet on said roll at the perforations when said end sheet is drawn therethrough, said dispensing plate means comprising a conical-shaped plate having at the apex thereof a dispensing opening and an open bottom facing and positioned over said roll, said end sheet extending through said dispensing opening.

4,262,817

ELEVATOR MECHANISM FOR AUTOMATIC TELLER MACHINE

Leonard A. Fish, Chicago, Ill., assignor to Bank Computer Network Corporation, Schiller Park, Ill.

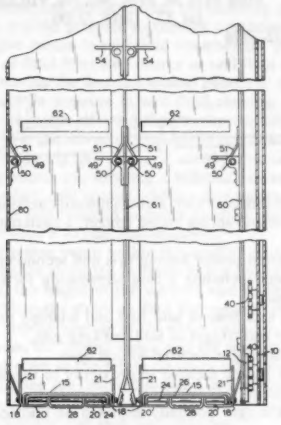
Filed Dec. 5, 1978, Ser. No. 966,746

Int. Cl.[3] B65H *3/44*

U.S. Cl. 221—130 **3 Claims**

1. A collector for an automatic teller machine, comprising means for supporting a relatively flat tray in a horizontal attitude, means for moving said tray along a vertical path of movement, a plurality of bill dispensers spaced along said path, an access compartment located at one end of said path, whereby said tray is adapted to collect bills dispensed from all of said bill dispensers at it moves along said path and to carry the collected bills to said access compartment, means for selectively tilting said tray to a tilted attitude, and means for tilting said

tray during return movement along said path, said tilting means comprising a lever mounted for rotation about a horizontal axis, said lever being interposed in said vertical path and



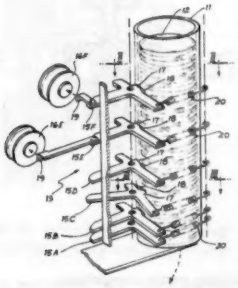
adapted to rotate about said axis during upward motion of said tray past said lever, and return rotation after said tray passes, said lever being adapted to not rotate in response to downward movement of said tray past said lever.

4,262,818

COIN DISPENSING APPARATUS INCLUDING GUIDE TUBE AND CAMS FOR RETAINING COINS IN THE GUIDE TUBE

Louis Stanley, Beverly Hills, Australia, assignor to Galexie Manufacturing Pty. Limited, Sydney, Australia

Filed Apr. 26, 1979, Ser. No. 33,625
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—296 **4 Claims**



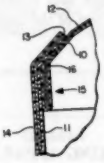
1. A dispensing apparatus to dispense objects of generally uniform size, said apparatus comprising a generally vertical guide defining a passage to receive and store a plurality of the objects, object engaging means movable between a first position projecting into said passage and a second position not projecting into said passage, said engaging means when in said first position is adapted to engage one of said objects and jam it within said guide to prevent movement of said one of said objects so that lower objects may be dispensed from within said guide while objects located above said one of said objects are retained within the guide, said engaging means including a plurality of pivotally mounted members each having a lobe positionable within said passage by horizontal pivoting movement of the member to said first position, said members being spaced axially along said passage with each of the lobes being adapted to engage a respective one of the objects located in said guide, and selection means adapted to move a predetermined one or more of said members from said first position to said second position to enable a predetermined number of said objects to be dispensed from within said guide.

4,262,819

TOOTHPASTE TUBE WITH LAMINATED HEADPIECE

Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 9, 1979, Ser. No. 65,186
Int. Cl.³ B65D *35/10, 35/16*
U.S. Cl. 222—92 **5 Claims**



1. A collapsible dispensing container comprising:

a. laminated tubular body, said laminated tubular body having a metal foil lamination and an inside thermoplastic lamina; and,

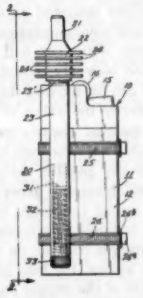
b. a metal headpiece connected to said laminated tubular body having a neck portion on the upper end, said metal headpiece having a thermoplastic lamina on the inside thereof which is heat fused to said inside thermoplastic lamina of said laminated tubular body, said headpiece having an annular ring therearound on the lower end which exposes said thermoplastic lamina in said headpiece to said inside thermoplastic lamina of said tubular body facilitating fusing said headpiece to said tube by heat fusion, said annular ring having an edge on the outside thereof, the portion of said headpiece above said edge extending upward from and away from said edge toward said neck portion, with said tubular body overlapping and covering said edge and bonding said inside lamina of said tubular body to said outer lamina of said headpiece.

4,262,820

HOT-MELT ADHESIVE DISPENSER

Theodore R. Flint, P.O. Box 513, Valley Forge, Pa. 19481

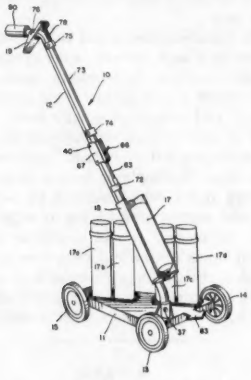
Filed Sep. 5, 1978, Ser. No. 939,399
Int. Cl.³ B67D *5/62*
U.S. Cl. 222—146 H **15 Claims**



1. A hot-melt adhesive dispenser comprising:

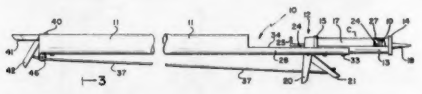
an elongated portable hand-held container means for containing a fuel and having a discharge orifice at one end;
valve means on said container means for cooperating with said orifice to release said fuel;
means on said container means adjacent said valve means for igniting fuel released from said container means to produce a flame;
an elongated barrel disposed alongside and carried by said container means, said barrel having a nozzle for flowing molten adhesive and a heat exchanger adjacent said nozzel; and,
strap means surrounding said container means for mounting said container means to said barrel with said heat exchanger disposed adjacent said orifice, so as to be in heat transfer relation with said flame, and off-set from said valve means at the top of the container means.

4,262,821
MARKING APPARATUS
Thomas J. Smrt, 172 S. Northwest Hwy., Cary, Ill. 60013
Filed Apr. 5, 1979, Ser. No. 27,362
Int. Cl.[3] E01C *23/16*; B05B *13/00*
U.S. Cl. 222—162 **9 Claims**



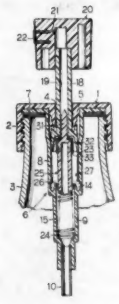
1. A marking apparatus adapted for use with a can containing marking material, the can having a valve for releasing the marking material and a valve actuator mounted on the valve, the apparatus comprising a base, wheels mounted on the base for permitting the base to be rolled over a surface to be marked, a handle attached to the base and extending upwardly therefrom, a can holder mounted on the handle for holding said can, the can holder having actuator stop means for engaging the valve actuator of the can and preventing movement thereof, a trigger rod movably mounted on the handle and engageable with the can for moving the can toward the actuator stop means whereby the valve of the can is opened to release the marking material, the trigger rod including a lower end portion engageable with the can, an intermediate portion which extends generally parallel with said handle, and an upper end portion which extends generally perpendicularly to said handle, and a spring resiliently biasing said lower end portion toward said actuator stop means, whereby said lower end portion of the trigger rod can be moved away from the actuator stop means against the bias of the spring by raising said upper end portion of the trigger rod to permit said can to be inserted between the actuator stop means and the lower end portion of the trigger rod.

4,262,822
CAULKING DEVICE
Vincent C. Corte, 2206 Palomino Dr., San Antonio, Tex. 78227
Filed May 30, 1978, Ser. No. 910,220
Int. Cl.[3] G01F *11/00*
U.S. Cl. 222—174 **6 Claims**



1. In combination with a conventional caulking gun including a handle and spring biased trigger, a caulking device comprising
an elongated holder having first and second ends,
said holder including a base terminating forwardly in said first end,
a slot in said base at said first end adapted to receive said handle and trigger of said caulking gun,
said caulking gun secured to said base,
a second handle secured in proximity to the second end of said holder,
a second trigger pivotally mounted on said second handle, and
a taut cable connecting said second trigger on said holder to said trigger on said caulking gun.

4,262,823
ATOMIZING PUMP
Yoshio Monden, Tokyo, Japan, assignor to Mitani Valve Co., Ltd., Tokyo, Japan
Filed May 26, 1978, Ser. No. 910,123
Claims priority, application Japan, Jun. 2, 1977, 52-71901[U]
Int. Cl.[3] B05B *9/043*
U.S. Cl. 222—321 **1 Claim**



1. An atomizing pump comprising:
a valve cylinder;
a variable volume fluid receiving chamber in said valve cylinder;
first and second slidable pistons defining opposite ends of said fluid chamber, said first piston being larger than the second piston, said valve cylinder being larger over a portion of its length to slidably accommodate said first piston, said second piston having a tube thereon extending toward said first piston;
fluid passage means in said first piston for communicating said fluid chamber with an atomizing passage;
fluid passage means in said second piston extending into said tube and communicating a source of fluid to be vaporized with said fluid chamber;
a plastic cap mounted on said tube and having a skirt and a tip, the tip comprising a first check valve means in said

fluid chamber for controlling the flow of fluid from said chamber to the fluid passage means in said first piston, said skirt normally covering the fluid passage means in the second piston and movable from the covering position in response to fluid pressure to thereby comprise a second check valve means in said fluid chamber for controlling the flow of fluid from said source to said fluid chamber;

means for moving the first and second pistons in a direction to increase the pressure in said fluid chamber, said first check valve means allowing fluid to express therethrough in response to the increased pressure in said fluid chamber;

means for returning the first and second pistons to their original position and creating a reduced pressure in said fluid chamber, said second check valve means being responsive to said reduced pressure to allow fluid to flow from said source to said fluid chamber;

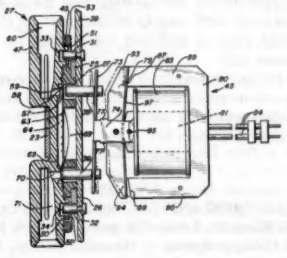
said second piston being within the smaller portion of the valve cylinder when the pressure in the fluid chamber is increased, the length of the walls of said smaller portion being sufficiently short so that the second piston exits from the smaller portion of the valve cylinder, creating a gap between the second piston and the smaller portion at a selected point in the return travel of said second piston thus permitting the reduced pressure in the fluid chamber to suck additional fluid from the source through the second check valve into said fluid chamber.

4,262,824

LOW-CURRENT E-FRAME ELECTRONIC MAGNET WITH A PERMANENT MAGNET ARMATURE FOR AN I. V. VALVING CONTROLLER

Orest Hrynewycz, Elmwood Park, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 878,650, Feb. 17, 1978, abandoned.
This application Feb. 11, 1980, Ser. No. 120,234
Int. Cl.³ A61M 5/14
U.S. Cl. 222—450 **12 Claims**



1. In a controller for use with a casette having:

(1) metering means for holding a predetermined volume of a fluid;

(2) closable inlet means, in fluid communication with said metering means, for permitting the flow of a fluid into said metering means; and

(3) closable outlet means, in fluid communication with said metering means, for permitting the flow of a fluid out of said metering means;

said controller having:

(A) first rigid member means movable between a first position and a second position, for when in said second position, closing said inlet means;

(B) second rigid member means, movable between a third position and a fourth position, for, when in said fourth position, closing said outlet means; and

(C) actuating means, commentable to and operatable on a source of power, for selectively and alternatively moving said first member means to said second position to close said inlet means and moving said second member means to said fourth position to close said outlet means, said actuating means including bistable magnetic means for, in the absence of power for said actuating means, moving said first member into said second position or moving said second member into said fourth position,

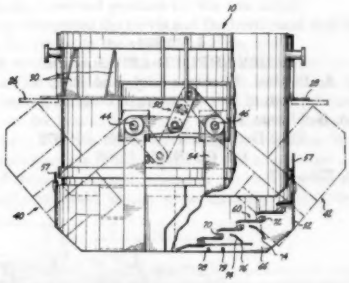
the improvement wherein said bistable magnetic means includes a single permanent magnet defining an elongated rigid member having its magnetic poles in the vicinity of the ends of said elongated member, and electromagnet means having magnetic poles, said poles of the permanent magnet being located in proximity to a pole of said electromagnet means, and pivoting means to permit said permanent magnet to pivotally move responsive to the polarity of said electromagnet pole, said permanent magnet having an arcuate shape with said permanent magnetic poles having their strongest field strengths oriented at least partly toward said electromagnet poles.

4,262,825

LOUVERED CLAMSHELL DOOR ASSEMBLY FOR PREHEATER CHARGING BUCKET

Jon O. Jacobson, Seattle, and Richard E. Parks, Bellevue, both of Wash., assignors to Harrison Robert Woolworth, Kent, Wash.

Filed Jun. 29, 1979, Ser. No. 53,178
Int. Cl.³ C22B 1/00
U.S. Cl. 222—503 **15 Claims**



1. A louvered clamshell door assembly for the bottom of an open-bottomed charging bucket comprising a pair of cooperable doors pivotably attached to said bucket for mutually opposite swinging movement about substantially parallel horizontal axes between a closed position wherein said doors adjoin along a midline and span the bottom of said bucket to form a weight-bearing bucket floor and an open position wherein said doors are swung outwardly with respect to said midline to discharge the contents of said bucket, each of said doors comprising:

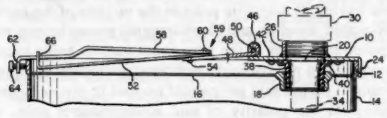
a plurality of stepped louvers positioned substantially parallel to said horizontal axes of swinging movement of said doors, said louvers having inner and outer edges with respect to said midline, and support means for supporting said louvers substantially horizontally and stepped downwardly with respect to one another towards said midline with said doors in said closed position, and connecting means pivotably connecting said outer edges of said louvers to said support means for pivotable movement with respect to said support means about axes substantially parallel to said swinging movement of said doors.

4,262,826

AUXILIARY BUNGHOLE ATTACHMENT

Eddie P. Green, P.O. Box 11554, Portland Oreg. 97211

Continuation of Ser. No. 917,632, Jun. 21, 1978, abandoned.
This application Dec. 28, 1979, Ser. No. 107,843
Int. Cl.[3] B65D 25/48
U.S. Cl. 222—567 12 Claims



1. An apparatus for protecting the bunghole of a barrel comprising:

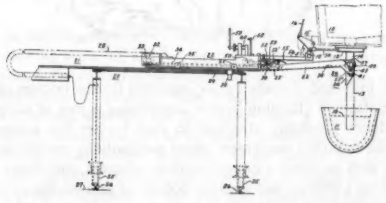
an auxiliary bunghole attachment adapted for rigid connection to the rim of a barrel with an auxiliary bunghole positioned in alignment with the bunghole of the barrel so as to permit the insertion of a portion of a pump through the hole and bunghole and into the barrel, said apparatus including lever actuated fastening means for releasably connecting said auxiliary bunghole attachment to the rim of the barrel said lever actuated fastening means including a lever with a pivot fulcrum inwardly of the rim of the barrel.

4,262,827

LADLE SHROUD APPARATUS

Gordon A. DeMasi, Michigan City, and Richard A. Staats, Valparaiso, both of Ind., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 26, 1979, Ser. No. 106,578
Int. Cl.[3] B22D 41/08
U.S. Cl. 222—607 6 Claims



1. In apparatus for use in positioning a pouring tube at the bottom opening of a casting vessel, the improvement comprising:

(a) a carriage positioned adjacent the casting vessel and having two dimensional movement in a horizontal plane,

(b) pouring tube support means mounted on the carriage extensible from an inboard position on the carriage to an outboard position thereof,

(c) an open-sided pouring tube holder mounted on the outboard end of the support means to partially embrace and support the pouring tube, and

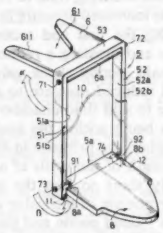
(d) means mounted on the carriage to raise and lower the pouring tube with respect to the bottom opening of the casting vessel.

4,262,828

SHOE REMOVER

Michiko Kosakai, 28-14, Ebaracho 2-chome, Nakano-ku; Tokyo, Japan

Filed Jul. 27, 1979, Ser. No. 61,502
Claims priority, application Japan, Nov. 13, 1978, 53-156570[U]; May 24, 1979, 54-69884[U]
Int. Cl.[3] A47J 51/02
U.S. Cl. 223—115 11 Claims



1. In a shoe remover including a foldable treading plate for putting down one of the feet thereon and a foldable shoe-removing plate having a notch for holding and taking off a shoe covering the other foot, the improvement which comprises:

a frame consisting of two vertical sections and a top transverse section connecting said two vertical sections so that said frame has an open end;

a treading plate secured so as to be unfoldable within said frame at a part in the vicinity of said open end of said frame;

a shoe-removing plate secured so as to be unfoldable within said frame at a part in the vicinity of said top transverse section;

first stopper means for locating said frame at a predetermined angle with respect to said treading plate when said treading plate is unfolded for making use of said shoe remover; and

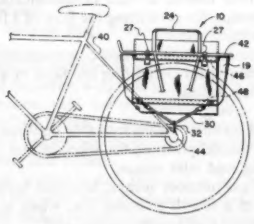
second stopper means for locating said shoe-removing plate at a predetermined angle with respect to said frame when said shoe-removing plate is unfolded for making use of said shoe remover.

4,262,829

BICYCLE PACK AND METHOD OF ATTACHMENT

Edward K. Hine, Jr., Louisville, and Gregory S. Hine, Boulder, both of Colo., assignors to Hine-Snowbridge, Inc., Boulder, Colo.

Filed Nov. 5, 1979, Ser. No. 90,947
Int. Cl.[3] B62J 9/00
U.S. Cl. 224—32 R 11 Claims



1. A pannier bag comprising:

a bag structure having a rear wall of pliable material;

upper attachment means adapted to be operably connected

to a bicycle structure the upper attachment means being positioned at the upper portion of the rear wall of the bag structure;

lower attachment means adapted to be operably connected to a bicycle structure, the lower attachment means being positioned at the lower portion of the rear wall of the bag structure;

tension means to induce a tension in the rear wall of the bag structure between the upper attachment means and the lower attachment means, and further being adapted to operably connect one of the upper attachment means and lower attachment means to the bicycle structure;

upper rigid means positioned adjacent the upper attachment means and extending transversely across the rear wall of the pannier bag; and

lower rigid means positioned adjacent the lower attachment means and extending transversely across the rear wall of the pannier bag;

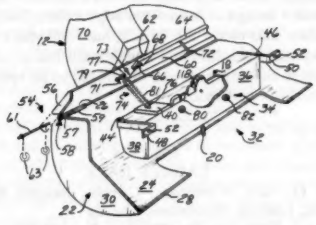
whereby the tension means, when the pannier bag is attached to the bicycle structure, induces an even tension between the upper and lower rigid means thereby tensioning the portion of the rear wall of the pannier bag therebetween to a flat, functionally rigid wall structure.

4,262,830

LATCH MECHANISM

Raymond H. Haves, Detroit, Mich., assignor to Wisco Corporation, Ferndale, Mich.

Filed Jun. 25, 1979, Ser. No. 52,125
Int. Cl.³ B60R *19/02*; E05C *3/06*
U.S. Cl. 224—42.06 **5 Claims**



1. The combination with a motor vehicle having a decorative tire cover mounted to a rear bumper comprising:

a base member including an outer wall with a top edge spaced outward from the bumper, the outer wall extending downward and inward in an arcuate manner to meet a lower edge of the bumper, a forward edge integral with the outer wall extending forward a distance abutting a lower portion of the bumper, a pair of opposed side walls extending from the outer wall to the bumper enclosing the sides of the support member and forming an open top, an access opening formed centrally in a lower portion of the outer wall extending from the bumper rearward a distance;

a support bracket including a transverse vertical wall spaced between the base member and the bumper, a pair of opposed vertical side walls extending from the vertical wall to the outer wall and affixed thereto by welding or other suitable means, a horizontal wall integral with the outer portions of an upper edge of the vertical wall extending rearward a distance;

a pair of spaced apart mounting brackets affixed to the side walls having a forward portion bent horizontally outward and abutting the bumper, a pair of apertures formed in the forward portions aligned with a pair of apertures in the bumper, a pair of bolts passing through the forward portion apertures and the bumper apertures, and a pair of nuts threadingly engaging the bolts to secure the support member to the bumper;

a hinged member overlaying the open top with downward extending flanges along a side and rear edges thereof, a pair of opposed hinges spaced forward from the rear edge to hinge the hinged member to the top edge of the outer wall, a central opening extending rearward a distance from a forward edge of the hinged member;

a tire cover in the form of a short hollow cylinder with rounded edges to form an upright disc, a segment of a lower portion of the disc removed to form a flat surface abutting the hinged member, a pair of flanges extending horizontally inward from an outer edge of the flat surface, one or more apertures formed in the flanges to align with one or more apertures in the hinged member and one or more bolts passing through the apertures in the flanges and the hinged member and a plurality of nuts threadingly engaging the bolts to secure the tire cover to the hinged member;

a lock bolt support bar extending across the central opening at a forward edge thereof, one or more apertures at the ends of the bolt support bar aligned with one or more apertures in the hinged member, a plurality of bolts passing through the aligned apertures in the bolt support bar and the hinged member, and a plurality of nuts threadingly engaging the bolts to secure the bolt support bar to the hinged member;

an "L" shaped lock bolt having a threaded end engaging a threaded aperture formed centrally in the bolt support bar, the threaded end engaging the threaded aperture and a nut threadingly engaging the threaded end to secure the lock bolt to the bolt support bar;

a hinge stop means comprising a rod having an upper end hinged to a clevis affixed to the hinged member and a lower portion slidingly engaging an opening formed in the horizontal wall of the support bracket, a lower end of the rod bent at a right angle to prevent removal of the rod from the aperture to form a stop limiting the amount the hinge member can be hinged from the support member defining a second position for the tire cover;

a spring interposed the clevis and the horizontal wall biasing the tire cover to the second position; and

a latch mechanism to releasably lock and hold the tire cover in a first position adjacent a trunk lid of the vehicle wherein the lock bolt is retained by a latch member, and to release the lock bolt releasing the tire cover to the second position wherein the cover is hinged away from the trunk allowing access to the trunk lock and a fuel filler connection, the latch member releasing the lock bolt by an electrically actuated means or a manually pivotable lever means.

4,262,831

TRAFFIC CONE RACK FOR MOUNTING ON A VEHICLE

William I. Buchanan, 2619 Princeton, San Angelo, Tex. 76901

Filed Jul. 11, 1978, Ser. No. 923,492
Int. Cl.³ B60R *11/00*
U.S. Cl. 224—42.45 R **5 Claims**

1. A traffic cone rack for storing and transporting traffic cones comprising:

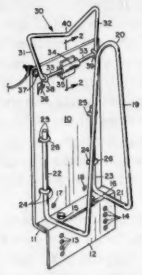
a. an elongated body member adapted to be secured to a vehicle,

b. means to secure said body member to a portion of the vehicle,

c. a cone support bail secured to said body member for supporting traffic cones positioned thereon, said cone support bail comprising base arms projecting parallel to said body member and attached to same, a bail base projecting outward from said base arms, and a cone support bail projecting upward from said bail base, said base arms, bail base, and cone support bail forming an integral unit, and

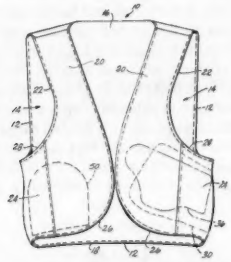
d. a cone locking bail tiltably mounted on an upper end of said body member for securing in place traffic cones positioned on said cone support bail, said cone locking bail

comprising a base tiltably secured to said body member, arms projecting from said base, said arms and said base forming an integral unit, a connecting collar secured at the center of said base, and a plastic tension plate mounted



intermediate said connecting collar and said body member, said base, connecting collar, and plastic tension plate forming a spring loading arrangement for maintaining a position of said cone locking bail relative to said cone support bail.

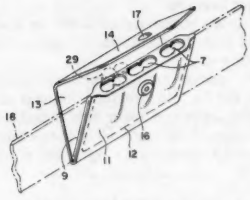
4,262,832
VEST-TYPE SHOULDER HOLSTER FOR CARRYING FIREARMS
Neale A. Perkins, Bradbury, Calif., assignor to Safariland Ltd. Inc., Monrovia, Calif.
Filed Nov. 30, 1979, Ser. No. 98,983
Int. Cl.³ A41D *1/04*; F41C *33/00*
U.S. Cl. 224—206 **16 Claims**



1. A device for carrying firearms comprising:

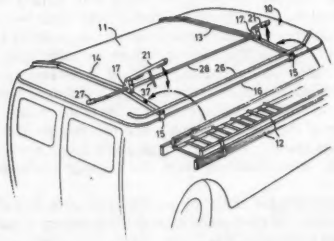
a vest for being worn on the upper body with a pair of armholes on opposite sides of the vest for accommodating the arms when the vest is worn; the vest having a back section extending between opposite back edges of the armholes for overlying the back; a pair of narrow elongated upper front pieces extending from opposite sides of the back section along opposite front edges of the armholes for overlying the shoulders and opposite sides of the chest in front of the arm; and a pair of elongated lower front pieces extending from the upper front pieces of the vest downwardly under bottom edges of the armholes to opposite sides of the back section so the lower front pieces overlie opposite sides of the upper body beneath the arms; and upper front pieces being narrower than the lower front pieces; the lower front pieces tapering wider as they extend from the upper front pieces under the armholes and toward the back portion; the vest having an outside face and an inside face; the width of the upper and lower front pieces being sufficiently narrow that a space is formed between them along the middle of the chest region when the vest is worn; and a pocket for carrying a holster, the pocket being secured to the inside face of the lower front portion of the vest beneath an armhole, the pocket having an opening that faces generally toward the opposite side of the vest.

4,262,833
CARTRIDGE POUCH
Eugene DeSantis, 20 Wellington Rd., Greenvale, N.Y. 11548
Filed Feb. 11, 1980, Ser. No. 120,394
Int. Cl.³ F42B *39/00*
U.S. Cl. 224—239 **7 Claims**



1. A belt mountable cartridge pouch comprising a first wall adapted to lie behind said belt, a second wall secured to and spaced from said first wall and adopted to lie in front of said belt, a third wall secured at the bottom and adapted to lie in front of said first wall, and a fourth wall laminated to, secured at the bottom to and adapted to line in front of said third wall, said third and fourth wall being formed from a single panel being folded at the top edge of each wall over against each other, a slot being cut in said top edge before folding with its longitudinal axis along the folding line, and space being provided between said third and fourth walls below said slot that is formed to fit snugly around cartridges to be releasably carried in said slot and space.

4,262,834
LADDER RACK
Wallace H. Nutt, Woodstock, Canada, assignor to Teledyne Canada, Limited, Woodstock, Canada
Filed Feb. 12, 1980, Ser. No. 120,904
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—324 **7 Claims**



1. A vehicle roof rack comprising a load supporting frame and a releasable clamping device thereon for releasably clamping a load in position on the frame, said clamping device comprising:

a support bracket rigidly mounted on the frame,

a clamp arm pivotally connected to the support bracket for pivotal movement about a fixed horizontal axis between a clamping position and a release position,

load engaging means mounted on the clamp arm and resilient means cooperating therewith for biassing said load engaging means into clamping engagement with the load,

a crankshaft journalled in said support bracket for rotation about an axis parallel to said horizontal axis, and

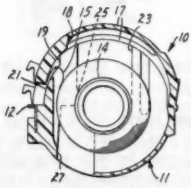
a linkage interconnecting said crankshaft with said clamp arm, said linkage being connected to the clamp arm at an intermediate position between said fixed axis and said load engaging means, and said linkage being movable through a dead-centre postion in response to rotataion of the crankshaft whereby to move said clamp arm between its clamping and release positions.

4,262,835

TAPE DISPENSER

Norbert E. Wrobel, New Scandia, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 28, 1980, Ser. No. 115,898
Int. Cl.³ B26F *3/02*
U.S. Cl. 225—25 **15 Claims**



1. A tape dispenser comprising:

a generally cylindrical, hollow plastic housing including an arcuate door hinged across the width of said housing and in its closed position forming a part of the circumferential edge wall of said housing, said housing having an arcuate tape fold back area extending from the free end of said arcuate door in its closed position parallel to and immediately beneath a portion of said arcuate door,

a tape cut-off blade across the width of said housing adjacent the free end of said arcuate door in its closed position,

a tape core supported for rotation within said housing, and

a strip of pressure sensitive adhesive tape wound on said tape core, said tape being wound on said core such that when said arcuate door is closed the non-adhesive side of the free end thereof will fold over and contact said fold back area of said housing while the adhesive side thereof contacts and adheres to the underside of the portion of said arcuate door overlying said fold back area,

the adhesion of said tape to said arcuate door and the tape pull-off force from said tape core being selected such that said tape will peel from the underside of said arcuate door as said arcuate door is opened beyond said tape fold back area.

4,262,836

SEWING APPARATUS USING THERMOPLASTIC STAPLES

Tokuzo Hirose, 7-26 Hashimoto-cho, Abenoku, Osaka, Japan

Filed Jun. 7, 1979, Ser. No. 46,631
Claims priority, application Japan, Apr. 13, 1979, 54-45842
Int. Cl.³ B27F *7/02*; D05B *23/00*
U.S. Cl. 227—110 **2 Claims**

1. A sewing apparatus comprising:

a bed adapted to receive thereon work;

a rigid arm fixedly positioned above said bed, said arm having fixed thereto a stationary external cylinder;

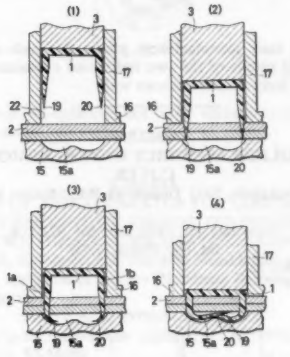
an internal cylinder mounted within said external cylinder for vertical movement with respect thereto toward and away from said bed, said internal cylinder having therein a vertical passage;

staple feeder means attached to said external cylinder for housing a supply of synthetic resin staples each having an inverted U-shaped configuration with spaced downwardly extending legs and for feeding said staples sequentially through said external cylinder and said internal cylinder into said vertical passage;

means, operatively connected between said external cylinder and said internal cylinder, for selectively vertically moving said internal cylinder between an upper position spaced from said bed and a lower position adjacent said bed;

said internal cylinder having at a lower end thereof outwardly extending work presser means for pressing against said bed work received thereon when said internal cylinder is in said lower position thereof;

staple driver means, mounted for vertical movement within said vertical passage, for driving said staples one at a time



downwardly through said vertical passage and for causing said legs of said staples to penetrate through the work on said bed;

said bed having therein recessed anvil means for bending said legs of said staples inwardly into abutting relationship with each other after penetration of said legs through the work;

said anvil means having extending upwardly from the bottom thereof projection means for cooperation with said staple driver means to press said abutted staple legs together and into tight attachment with the work; and

heater means, located adjacent said anvil means, for heating and fusing together said abutted staple legs to form an integral and uniform dimensioned member on the underside of the work.

4,262,837

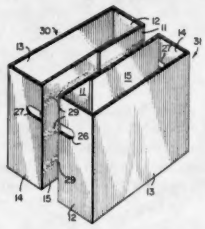
MULTIPLE BLANK BOTTLE CARRIER

Edwin A. Fremion, Cleveland, Tenn., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 9, 1979, Ser. No. 82,482
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—23 R **5 Claims**

1. A compartmented bottle carrier constructed from two identical blanks of corrugated paperboard which separately form individual containers that are adhered together, each of said containers comprising a pair of opposed side walls and a pair of opposed end walls connected to one another along parallel fold lines, and a plurality of bottom closure flaps foldably connected along a common score line to the bottom end of said side and end walls, the improvement wherein the individual containers each have a manufacturers joint formed from two overlapping panels located substantially midway of one of their side walls, the first of said overlapping panels having a length substantially equal to one half of the width of said side wall and the second of said panels having a length that is greater than one half the width of said side wall, said first overlapping panels being arranged to lie exteriorly of said

second overlapping panels in each case so that when the two individual containers are adhered together along the side walls



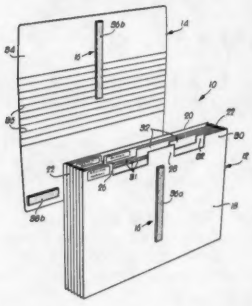
containing their manufacturers joints, the ends of the first overlapping panels of the two individual containers butt one another to form one continuous wall.

4,262,838

FILE FOLDER ASSEMBLY HAVING REMOVABLE COVER

John R. Mackenzie, 3001 Tomahawk Rd., Mission Hills, Kans. 66208

Filed Dec. 20, 1978, Ser. No. 971,310
Int. Cl.³ B65D *27/08*
U.S. Cl. 229—72 **10 Claims**



1. A file folder assembly comprising:

a plurality of open-top, paper-receiving sections, each section being provided with a pair of generally rectangular side panels, end panels interconnecting said side panels, and a bottom panel,

said sections being removably located in side-by-side relationship to one another on a support surface for ease of access to the contents thereof;

a number, lesser than said plurality, of top covers for said sections; and

means for selectively and releasably securing one of said top covers to a selected one of said sections individually and in a disposition for covering the open top of the latter, when said selected section is removed from said support surface for transport and use thereof.

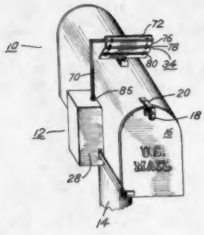
4,262,839

MAIL DELIVERY INDICATOR

Walter Wisniewski, 5096 N. 325 West, LaPorte, Ind. 46350

Filed Jul. 20, 1979, Ser. No. 59,300
Int. Cl.³ A47G *29/12*
U.S. Cl. 232—35 **6 Claims**

1. A mail delivery indicator to be attached to a motor carrier delivery mailbox to indicate when mail has been delivered, said indicator comprising a mounting element to be attached to the mailbox, an upper and a lower plate attached to said mounting element, a vertical shaft extending through openings in said upper and lower plates, a notification banner connected to said shaft and having a cross member connected to said vertical shaft and extending over the top of the mailbox and having a plurality of panels suspended from said cross member, foldable substantially flat when said cross member is lowered, a bracket adapted to be attached to the top of the mailbox and connected to the bottom of said banner, a raising means for lifting said banner including a collar disposed on said vertical shaft be-



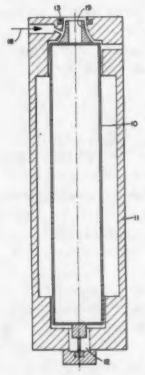
tween said upper and lower plates, a spring reacting between said collar and one of said plates for raising said vertical shaft, and an activation means for activating said raising means in which said activation means automatically triggers said raising means, thereby elevating and displaying said notification banner when the door of the mailbox is opened, said activation means including a notch in said vertical shaft, an activation arm adapted to be connected to the door of the mailbox, and a releasing means operated by said arm for lodging in said notch to hold said vertical shaft in a lowered position.

4,262,840

ROTOR FOR HIGH OPERATING SPEEDS

Heinz Grönert, Emmering; Jochen Vetter, Karlsfeld, and Manfred Eckert, Dachau, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg AG München, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,315
Int. Cl.³ B01D *45/12*; B04B *5/00*
U.S. Cl. 233—1 R **26 Claims**



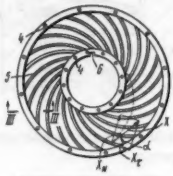
1. A rotor arrangement including a rotor element constructed as a hollow member such as a centrifugal drum operable at high peripheral speeds, characterized in that the rotor element consists essentially of elemental boron.

4,262,841

TRUNCATED CONICAL DISC SEPARATOR

Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65, and Gennady G. Korobov, prospekt Kirova, 14/16, kv. 45, both of Saratov, U.S.S.R.

Filed Oct. 19, 1978, Ser. No. 952,729
Claims priority, application U.S.S.R., Oct. 26, 1977, 2538106
Int. Cl.³ B04B *1/08*
U.S. Cl. 233—29 **3 Claims**



1. A separator for separating solid particles from liquids comprising a truncated conical disc having an inwardly extending flange at one end of said disc, and outwardly entending flange at the other end of said disc, a plurality of spaced projections on said outward and inward flanges, a plurality of curved ribs located on the surface of said disc shaped such that when viewed as a projection thereof on a plane perpendicular to the longitudinal axis of said disc produces a plurality of helical curves, each said curve having a pitch such that an angle alpha at any point along said rib that is greater than the angle of friction of the solids as such solids slide along the truncated surface of the disc, said angle alpha being measured between the tangent to any point in the plane of each said rib from the side of the direction of the flow of the liquid being clarified and the vector of the velocity of the flow of the liquid being clarified, said vector directionally coinciding with the movement of the solids being disposed of, said angle alpha being between 30 and 60 deg., the height of said ribs measured in a section normal to the truncated conical surface of the disc and said rib being between 0.2 and 0.5 the height of said projections, and said rib having an upstanding edge which meets head-on the flow of said liquid being clarified and forms an angle approximately 90 deg. with the surface of said disc.

4,262,842

HOT WATER TIMER

Thomas B. Grover, Jr., 11/70 Vance Jackson, San Antonio, Tex. 78230; Le Moey Wiebush, and David G. Anderson. both of San Antonio, Tex., assignors to Thomas B. Grover, San Antonio, Tex.

Filed Aug. 10, 1979, Ser. No. 65,513
Int. Cl.³ G07C *3/10*
U.S. Cl. 235—92 T **15 Claims**

1. A control knob for connection to a shank that rotates to operate a hot water valve, said control knob comprising:

housing means;

means for removably connecting said housing means to said shank;

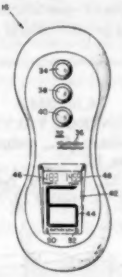
tilt operable switch means inside said housing means, said switch means being actuated in response to rotation of said shank by said control knob;

a source of power connected to said switch means;

control circuitry inside said housing operable by said switch means and said source of power;

warning means in said control knob and connected to said control circuitry;

timing means in said control circuitry so that upon said control knob rotating said shank to turn ON said hot water valve said switch means is actuated to give a signal to said control circuitry which starts said timing means, said timing means having predetermined time intervals for operating said warning means after receipt of said signal to indicate to an individual passage of said predetermined



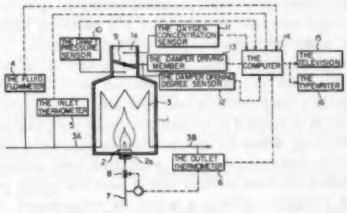
time intervals until said hot water valve is closed thereby deactivating said switch means.

4,262,843

METHOD OF AND APPARATUS FOR CONTROLLING THE FEED AMOUNT OF AIR FOR COMBUSTION IN A NATURAL DRAFT-TYPE HEATING FURNACE

Keizo Omori, Kawasaki, and Yasuhiro Suzuki, Yokohama, both of Japan, assignors to Nippon Petroleum Refining Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1979, Ser. No. 9,825
Claims priority, application Japan, Feb. 10, 1978, 53-14517; Feb. 10, 1978, 53-14518
Int. Cl.³ F23N *3/00, 1/00*
U.S. Cl. 236—15 C **15 Claims**



1. A natural draft type heating furnace comprising a furnace body having an air intake opening and an exhaust gas discharge opening, through which air is naturally drafted, a burner mounted in the furnace body to ignite and burn a fuel, a heat exchanger disposed in a space of the furnace body downstream of said burner and arranged so that a fluid to be heated is heated by heat exchange with a combustion gas formed by combustion of the fuel by said burner while the fluid travels in the interior of the heat exchanger from an inlet thereof to an outlet thereof, a damper mounted on the exhaust gas discharge opening of the furnace body to open or close the passage area, damper driving means connected to said damper to open or close said damper, a pressure sensor for detecting the pressure in the furnace, an oxygen concentration sensor for detecting the oxygen concentration in the combustion gas in the furnace and a damper opening degree control system including first damper opening degree control means for controlling the damper driving means based on a moving average value of measured values of the pressure in the furnace obtained by conducting measurement of a predetermined number of times at predetermined time intervals, second damper opening degree control means for controlling the damper driving means to maintain the damper opening degree as it is when the measured value of the pressure in the furnace is an abnormal value

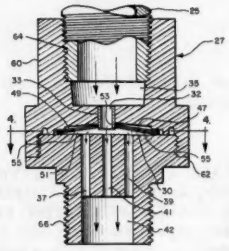
and third damper opening degree control means for controlling the damper driving means to open said damper irrespective of the first damper opening degree control means when the measured value of the oxygen concentration in the combustion gas is lower than a predetermined lower limit.

4,262,844

CONTROL VALVE

George W. Sekiya, Chicago, Ill., assignor to Mark Controls Corporation, Evanston, Ill.

Filed Jan. 22, 1980, Ser. No. 114,312
Int. Cl.³ G05D *23/10*
U.S. Cl. 236—48 R **16 Claims**



1. A temperature-responsive valve for controlling the flow of a fluid through said valve comprising:

a housing;

a chamber in said housing;

an inlet port communicating with said chamber;

at least one outlet port communicating with said chamber;

a temperature-deflectable partition having an aperture therethrough and having a surface, said partition subdividing said chamber into an inflow section containing said inlet port and an outlet section containing said outlet port, said inlet section and said outlet section communicating substantially only through said aperture, said aperture being offset with respect to at least one outlet port, said partition deflecting, when its temperature substantially reaches a first predetermined value, such that said surface itself restricts the flow of fluid into at least one outlet port and said partition deflecting when its temperature substantially reaches a second predetermined value to position said surface away from said outlet port thus permitting an unrestricted flow of said fluid into said outlet port; and,

a tube extending into and past said aperture when said partition is away from said outlet port, said tube making said valve substantially independent of the pressure of and turbulence generated by said fluid.

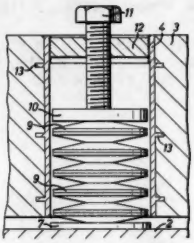
4,262,845

CONCRETE SLAB STRUCTURE FOR RAILWAY TRACK

John C. Lucas, Allestree, and William K. Aitken, Weston-on-Trent, both of England, assignors to British Railways Board, Great Britain

Filed Mar. 21, 1979, Ser. No. 22,519
Claims priority, application United Kingdom, Mar. 30, 1978, 12391/78
Int. Cl.³ E01B *1/00*
U.S. Cl. 238—7 **10 Claims**

1. A concrete slab structure for railway track comprising (a) a concrete slab, (b) a series of tubes secured against longitudinal movement in holes in the slab extending through the slab from its top surface to its bottom surface, (c) springs each arranged in a respective one of said tubes and (d) adjustable means locating in the upper ends of each said tube for pre-loading said springs against a supporting base structure for the slab



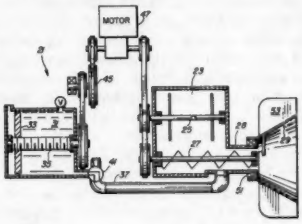
whereby the slab is lifted off said base structure and resiliently supported by said springs.

4,262,846

METHOD FOR THE DISTRIBUTION OF BIOLOGICALLY ACTIVE CHEMICALS

William A. Funkhouser, Tonopah, Ariz., assignor to Albany International Corp., Needham Heights, Mass.

Filed Oct. 2, 1978, Ser. No. 947,453
Int. Cl.³ B05B *17/00*
U.S. Cl. 239—1 **6 Claims**



1. A method for distributing biologically active chemicals of the ultra low volume type encapsulated in dispensers over a pre-selected area comprising:

(a) applying a "sticker" substance to the dispensers to coat the dispensers to facilitate attachment to living organisms in the area;

(b) transferring the coated dispensers to the interior surface of a generally conical distribution device which diverges outwardly from an intake end to a discharge end and depositing the coated dispensers on the surface at least at the intake end of the conical distribution device;

(c) rotating the conical distribution device at a pre-determined rotational speed thereby moving said dispensers outwardly along the interior surface of said distribution device; and

(d) discharging said dispensers from said distribution device at said discharge end generally tangentially to the axis of said distribution device over said area.

4,262,847

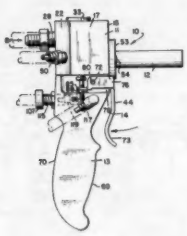
URETHANE FOAM GUN

Phillip L. Stitzer, Cochranville, Pa., and Stephen A. Deutsch, Greenwich, Conn., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Jan. 2, 1979, Ser. No. 249
Int. Cl.³ B05B *7/02*
U.S. Cl. 239—112 **11 Claims**

1. A foam gun comprising a body member being formed with first conduit means for a first component and second

conduit means for a second component, air conduit means for supplying air under pressure, said air conduit means comprising first and second air conduits in communication with an outlet orifice for each air conduit; and said first and second valves operatively mounted in said first and second component conduit means respectively for selective communication of said first and second component conduit means with a respective air conduit means, a hand grip mounted with said block, and a trigger mounted with the hand grip and operatively



associated with the valves, whereby pressing the trigger selectively actuates said valves so as to permit communication between said respective air conduits and said first and second fluid component conduit means, said air conduits converging at said outlet orifice, so that said components are individually air mixed and then air transported to said outlet orifice, wherein the axes of said first and second conduit means are parallel to each other and respectively intersect said first and second air conduits at about 90°, and wherein the axes of said air conduits intersect each other at about 90°.

4,262,848

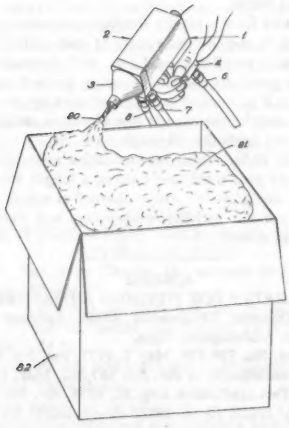
GUN FOR IN SITU FORMATION OF FOAM IN PACKAGES

Paul R. Chabria, 3 N. 735 Locust, West Chicago, Ill. 60185

Division of Ser. No. 859,553, Dec. 12, 1977. This application Apr. 7, 1980, Ser. No. 137,801

Int. Cl.³ B05B *7/08, 15/02*

U.S. Cl. 239—112 **2 Claims**



1. In a gun for the in situ formation of plastic foam, said gun having separate foam-forming liquid flow channels, valves arranged to control the flow of liquid through said channels, means for manipulating said valves, a nozzle at the forward extremity of said gun, and means for air-purging said channels downstream from said valves, the improvement comprising nozzle channels extending through said nozzle and respectively connecting with said respective liquid flow channels downstream from said valves, said nozzle channels opening to the atmosphere at the forward ends thereof being so formed and converging within said nozzle that streams issue therefrom as discrete streams which intersect at a point in space exteriorly and forwardly of said gun to mix and initiate reaction at said point and thereafter continue forward flow as a reacting stream.

4,262,849

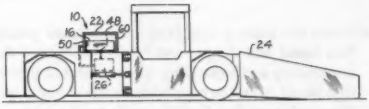
HIGH PRESSURE WASHER FOR MINE EQUIPMENT

Kenneth R. Elam, 226 Walden Ct., Eureka, Mo. 63025

Filed Apr. 26, 1979, Ser. No. 33,578

Int. Cl.³ B05B *9/00*

U.S. Cl. 239—175 **1 Claim**



1. A washing apparatus in combination with a mine vehicle having a fluid power source comprising:

a rigid housing mounted on the vehicle;

means for containing water, said means being a first reservoir in said housing, said reservoir including a float and being adapted for connection to a water supply external to the vehicle via a filter and a pressure-reducing valve;

means for containing cleaning solution, said means being a second reservoir in said housing;

means for drawing a combined flow of water from said first reservoir, and cleaning solution from said second reservoir, and for ejecting said combined flow under pressure, said means being a pump in said housing, said pump being connected to draw said combined flow through a single inlet having a first conduit connected to said first reservoir and including a first variable restrictor for controlling said water, and having a second conduit, separate from said first conduit, connected to said second reservoir and including a second variable restrictor for controlling said cleaning solution;

said pump operably connected to said fluid power source of said vehicle;

an elongated high pressure hose connected to conduct pressurized combined flow from said pump; and

a nozzle connected for directing said pressurized combined flow from said hose.

4,262,850

APPARATUS AND PROCESS FOR PRODUCING SLURRY

Yasuyuki Nakabayashi, Yokohama; Yoshiyuki Matsuno, and Kihei Katsuta, both of Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo K.K. and Electric Power Development Co. Ltd., both of Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,900

Claims priority, application Japan, Feb. 23, 1978, 53-20559

Int. Cl.³ B02C *23/18*

U.S. Cl. 241—17 **8 Claims**

5. A process for producing slurry comprising the steps of:

providing a mill;

feeding a first liquid into the mill;

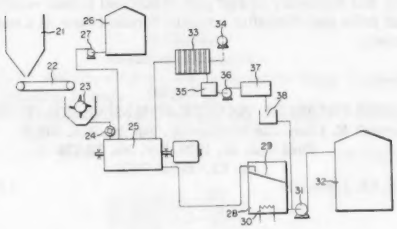
feeding a lumpy solid into the mill separately from the feeding of the first liquid, the lumpy solid containing a second liquid therein;

crushing, mixing and stirring the lumpy solid in the presence of the first liquid to produce a slurry;

heating the slurry and the lumpy solid and the second liquid

to a predetermined temperature such that the second liquid is substantially evaporated while the first liquid is substantially unaffected;

removing the evaporated second liquid;



wherein the heating step evaporates a small portion of the first liquid and the process further comprises the step of condensing and separating the evaporated portion of the first liquid from the evaporated second liquid and adding the condensed first liquid portion to the slurry.

4,262,851

PROCESS FOR CONVERTING CRUDE AND/OR COARSELY CRYSTALLINE PERYLENETETRACARBOXYLIC ACID DIIMIDES TO A PIGMENTARY FORM

Fritz Graser, Ludwigshafen, and Paul Guenthert, Schifferstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

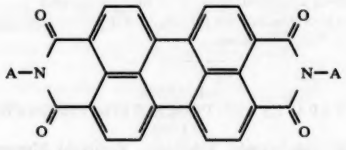
Filed Jul. 5, 1979, Ser. No. 55,051

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832761

Int. Cl.[3] **B02C** *4/04, 13/00;* **C07D** *471/06, 403/12*

U.S. Cl. 241—16 **10 Claims**

1. A process for converting an unpurified, non-pigmentary crystalline perylene-3,4,9,10-tetracarboxylic acid diimide of the formula:



wherein A is phenyl which is unsubstituted or substituted by 1 to 3 substituents selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, phenoxy, chlorine, bromine, fluorine, lower alkanoylamino, benzoylamino, carbonylaminophenyl and carbonylamino-C_1–C_4 alkyl or phenylazo, or A is an unsaturated 5-membered or 6-membered ring containing 1 or 2 nitrogen atoms as sole hetero atoms which may be fused to a benzene ring, C_3–C_6 alkyl, or C_2–C_3 alkyl which is substituted by C_1–C_4 alkoxy, phenyl, or C_2–C_5 alkanoylamino, the two A groups being identical or different, to a pigmentary form, comprising: milling said unpurified, non-pigmentary perylene diimide in a high-speed stirred mill in the absence of a surfactant until it has been communited to a finely divided state required for pigmentary applications; and isolating said finely ground pigment.

4,262,852

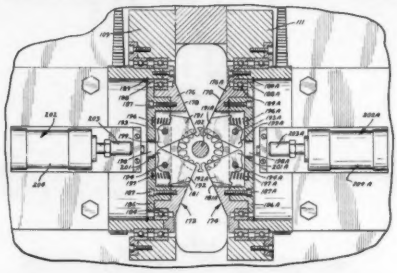
METHOD FOR WINDING ARMATURE CORES

Raymon H. Dammar, Minneapolis, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Continuation of Ser. No. 712,231, Aug. 6, 1976, abandoned, which is a division of Ser. No. 557,363, Mar. 11, 1975, abandoned. This application Jan. 18, 1979, Ser. No. 4,296

Int. Cl.[3] **H02K** *15/04;* **H01F** *41/04;* **B65H** *81/00*

U.S. Cl. 242—7.03 **5 Claims**



5. A method of winding coils of wire onto an armature from a compact winding array, said core having a plurality of slots for accommodating coils of wire comprising the steps of:

holding the armature in an upright position with the longitudinal axis of the core in a generally vertical position,

shielding a portion of the core with shield means disposed along an axis generally normal to the core and exposing a pair of slots on generally opposing sides of the core,

disposing a ring-like annular member having a central bore about said normal axis in circumambient and radially aligned relation to said shield means and in axially proximate relation to said core,

supporting the outer periphery of the annular member on a surface in radial alignment with said annular member for rotation about said axis,

suporting the outer periphery of the shield means centrally of said annular member for rotation and in general radial alignment with the surface supporting said annular member whereby the annular member may rotate relative to the shield means,

feeding a wire from a supply through said annular member along a path radially outwardly of said central bore and substantially parallel to said axis, and thereafter feeding said wire generally radially inwardly toward said core,

winding a coil of wire in said pair of slots by rotating said ring-like annular member in one direction about said axis as said wire feeds therethrough, and,

locating said radial alignments to define an axially limited radial zone proximate said core of a length substantially less than the diametric extent thereof in which said wire feeding, annular member supporting, and shield means supporting occurs.

4,262,853

APPARATUS FOR WINDING ARMATURES

Raymon H. Dammar, Minneapolis, Minn., assignor to Possis Corporation, Minneapolis, Minn.

Division of Ser. No. 795,374, May 7, 1977, Pat. No. 4,174,815, which is a continuation of Ser. No. 557,363, Mar. 11, 1975, abandoned. This application Aug. 31, 1978, Ser. No. 938,504

Int. Cl.[3] **H02K** *15/04;* **H01F** *41/04;* **B65H** *81/00*

U.S. Cl. 242—7.05 B **2 Claims**

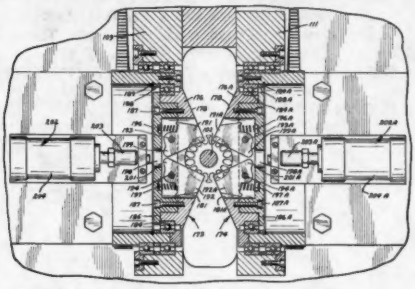
1. An apparatus for winding coils of wire on an object having a longitudinal axis comprising:

means for supporting the object in a wire receiving position,

winding assemblies located adjacent opposite sides of the means to support the object,

each said assembly including:

a. like first and second respective rotatable winding means for winding wire on said object,
b. said first and second rotatable winding means each respectively comprising an annular member having an outer peripheral surface and a central opening,
c. means radially aligned with said outer peripheral surface rotatably mounting said annular member on the winding assembly means for rotation about an axis normal to the longitudinal axis of the object,
d. shield means for guiding wire to the object, said shield means having a portion located in said central opening,
e. means radially aligned with said mounting means on the annular member outer peripheral surface rotatably connecting the shield means to the annular member and locating the annular member around at least part of the shield means,
f. said annular member having passage means disposed radi-



ally outwardly of said opening for accommodating wire whereby on rotation of the annular member wire is directed around the shield means and directed thereby to the object,
g. said annular member, shield means, mounting means, and connecting means of said winding assembly thereby being in radial alignment proximate the object and defining a radial zone of limited axial extent and having a diameter substantially greater than the axial extent thereof,
drive means for rotating said first and second winding means in opposite directions,
said drive means including a motor and a single belt having parallel arcuate reaches drivably connecting the motor with and along the annular members of the first and second winding means, and pulley means connecting said reaches for movement in opposite directions whereby the annular members are driven in opposite rotational directions to wind coils of wire on the object.

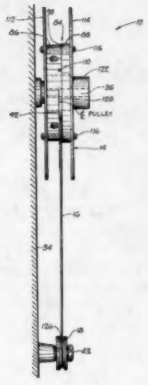
4,262,854

LEVEL WINDING REEL MECHANISM FOR A BIN LEVEL INDICATOR

Richard G. Jett, Saint Charles, Ill., assignor to Ludlow Industries, Inc., Elburn, Ill.

Filed Sep. 14, 1979, Ser. No. 75,760
Int. Cl.³ B65H *75/00;* **G01F** *23/00*
U.S. Cl. 242—54 R **9 Claims**

1. A level winding reel mechanism, comprising
supporting frame means,
a winding reel,
means rotatably mounting said winding reel on said frame means,
a line connected to said reel and adapted to be wound upon said reel,
said line being generally circular in cross-section,
a pulley for guiding said line to said reel,
said line being trained around said pulley,
and means rotatably mounting said pulley on said frame means with the rotary axis of said pulley parallel with the rotary axis of said reel and spaced laterally therefrom,
said pulley having a peripheral groove therein for receiving said line,
said reel having a stepped hub comprising first and second substantially cylindrical portions having first and second different diameters with an annular shoulder between said first and second portions,
said first diameter being less than said second diameter by an amount corresponding generally with the diameter of said line,
said reel having first and second end flanges projecting radially from the ends of said first and second portions of said hub,
said hub having anchor means therein for anchoring one end of said line,



said first portion of said hub having an entry hole therein for receiving said line to afford access for said line to said anchor means,
said entry hole being adjacent said shoulder,
said pulley having its peripheral groove in alignment with a point on said first portion of said hub spaced away from said shoulder and also away from the center of said entry hole,
the spacing between said point and the center of said entry hole corresponding generally to the diameter of said line,
whereby the second wrapping of said line around said hub is laid down adjacent the first wrapping,
and each subsequent wrapping is laid down adjacent the preceding wrapping.

4,262,855

WEB-SPLICING APPARATUS

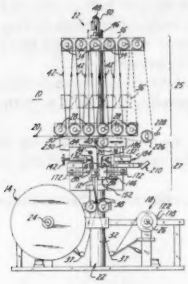
David R. Haag, Matawan, N.J., assignor to Champion-Edison, Inc., Edison, N.J.

Filed Apr. 14, 1980, Ser. No. 139,909
Int. Cl.³ B65H *19/18*
U.S. Cl. 242—58.1 **3 Claims**

1. An improved apparatus for automatically splicing the beginning of one roll of paper or the like onto the approximate end of a second roll of paper or the like without discontinuing the flow of paper to a utilizing device, of the type having a support stand; a pair of support shaft means for carrying a first roll of paper and a second exhausting roll of paper; festooner means; braking means; clamping, severing and splicing means; operating means; and switching means, wherein the improvement comprises:
(a) speed sensing means mounted on a common support bar slidably displaceable along an upright portion of the support stand, said speed sensing means being responsive to a

predetermined speed of the second exhausting roll of paper;

(b) electrical sensing means disposed in line with said speed



sensing means, said electrical sensing means being activated upon an actuation of said speed sensing means; and

(c) control means responsive to said electrical sensing means for initiating an operation of the braking means.

4,262,856

TAPE REEL

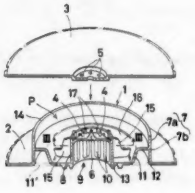
Akira Nakagawa, Tokyo, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jan. 14, 1980, Ser. No. 111,629

Claims priority, application Japan, Jan. 16, 1979, 54-2177

Int. Cl.³ B65H *75/18*

U.S. Cl. 242—71.8 **3 Claims**



1. In a plastic tape reel comprising a hub and two flanges attached one each to the opposite axial ends of the hub, said hub comprising an inner cylindrical part possessing a hollow portion adapted to engage with the reel engaging shaft of a video recording and reproducing device, an outer cylindrical part possessing a peripheral surface adapted to have tape wound thereon and an annular part connecting said inner cylindrical part to said outer cylindrical part wherein at least one of said two flanges is molded integrally with one axial end of said hub, the improvement which comprises the annular part being bent in the axial direction over its radial length and being constructed so that the inner edge thereof joins the axial basal edge of said inner cylindrical part and the outer edge thereof joins said outer cylindrical part intermediate of the entire axial length thereof.

4,262,857

FISHING REEL SPOOL

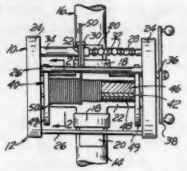
Arthur E. Gilbert, P.O. Box 216, Alva, Fla. 33920

Filed Aug. 14, 1978, Ser. No. 933,261

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—84.1 A **10 Claims**

1. In a fishing reel adapted to play a fishing line by unwinding said line from a spool and to retrieve said line by winding said line on said spool, an adaptor comprising a line winding peripheral surface on the exterior surface of said adaptor presenting a periodically variable radius of wind to said line for



each turn of line wound about said spool, said adaptor fitting over said spool.

4,262,858

INERTIA-RESPONSIVE ACTUATING DEVICE FOR VEHICLE SEAT BELT RETRACTORS

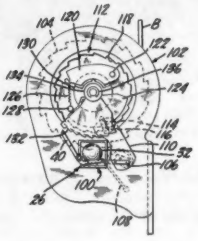
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,131

Claims priority, application Japan, May 8, 1979, 54-055309

Int. Cl.³ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **5 Claims**



1. An inertia-responsive actuating device for an emergency locking vehicle seat belt retractor comprising a spherical mass, a support for the mass having an annular seat in which the mass nests in the absence of a predetermined acceleration of the seat, the seat being substantially below the center of gravity of the mass so that upon acceleration of the seat the mass rolls upwardly and laterally out of the seat; and a lever arm pivoted about a substantially horizontal axis located adjacent the seat, the lever arm having a detecting portion located above the seat and below the center of the mass and engageable by the mass when the mass rolls out of the seat such that said portion is thereupon pushed down by the mass and having an actuating portion adapted to actuate a locking mechanism of the retractor.

4,262,859

TRANSPORT APPARATUS WITH DIFFERENTIAL FORCE SYSTEM

Takeshi Yamanaka, Sunnyvale, Calif., assignor to American Videonetics Corporation, Sunnyvale, Calif.

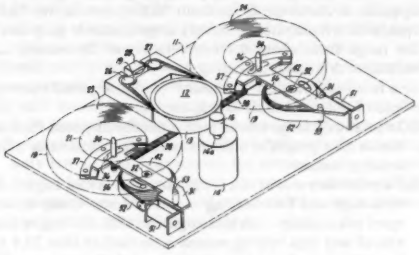
Continuation of Ser. No. 849,971, Nov. 9, 1977, abandoned, and a continuation of Ser. No. 654,526, Feb. 2, 1976, abandoned. This application Jun. 18, 1979, Ser. No. 49,564

Int. Cl.³ G03B *1/04;* **G11B** *15/32*

U.S. Cl. 242—192 **18 Claims**

1. In transport apparatus for feeding a length of pliant material between supply and take-up rolls in edge driven relationship with a drive capstan: carriage means carrying the take-up roll for movement toward and away from the capstan, static force means for yieldably resisting movement of the take-up roll away from the capstan with a predetermined force, and means for automatically and instanteously coupling

the force means to the take-up carriage to press the take-up roll against the capstan with the predetermined force at the outset of tape movement toward the take-up roll.



2. The transport apparatus of Claim 1 wherein the means for coupling the force means comprises an electrically energizable solenoid.

4,262,860

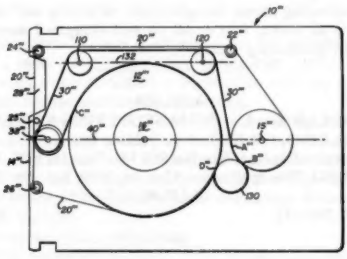
TAPE CARTRIDGE WITH INCREASED TAPE CAPACITY

Roy E. Hurtig, Saratoga; Bert R. Larson, San Jose, and Steven D. Smith, Sunnyvale, all of Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed Oct. 9, 1979, Ser. No. 82,558

Int. Cl.[3] G03B *1/04;* G11B *15/32*

U.S. Cl. 242—192 **30 Claims**



1. A tape cartridge comprising:

a cartridge housing for interfacing with a tape cartridge drive, the cartridge having a front planar face with an opening for receiving a recording/reproducing head and a baseplate which is substantially perpendicular to the front face;

a first tape pack and a second tape pack, the first and second tape packs each rotatably mounted in the housing about a first and second fixed axis of rotation, respectively, with a tape web attached at one end to the first tape pack and at the other end to the second tape pack, the first and second axes of rotation being substantially perpendicular to said baseplate, the first and second packs being positioned with the first axis of rotation aligned laterally relative to the second axis of rotation with a straight line projecting through the first and second axes of rotation intersecting the plane of the front face at an acute angle;

a plurality of guide means rigidly mounted to the cartridge housing and positioned to guide said tape web when moving intermediate the first and second reels and past said opening to contact said head, said plurality of guide means including a first guide located in a corner of said tape cartridge adjacent to said front face of said cartridge housing and adjacent to said opening in said cartridge, a second guide located adjacent to said front face of said tape cartridge and adjacent to said opening in said cartridge on the opposite side of said opening from said first guide, a third guide located generally in a corner of said tape cartridge adjacent to said front face of said first guide, and a fourth guide located along an edge of said tape cartridge generally positioned such that a line drawn through said first and said fourth guide extends perpendicular with said front face of said cartridge;

an endless drive belt constructed of a flexible elastic material;

a plurality of rollers over which the belt is wrapped, the rollers being positioned such that the belt forms at least two arcuate portions passing between and engaging the first and second tape pack;

said plurality of rollers includes a first driven roller adapted to contact a driving roller of a suitable tape drive when said tape cartridge is inserted therewithin, a second roller located such that a line drawn through the axes of rotation of said second roller and said first driven roller forms an acute angle with said front face of said tape cartridge opposite from said second roller at a distance less than the perpendicular distance from the axis of rotation of said first tape pack to said front face of said cartridge but greater than the perpendicular distance from said second tape pack to said front face of said tape cartridge, and a fourth roller located generally along the rear edge of said cartridge housing opposite from said front face of said cartridge housing and generally in a corner diagonally opposite from said first tape guide.

4,262,861

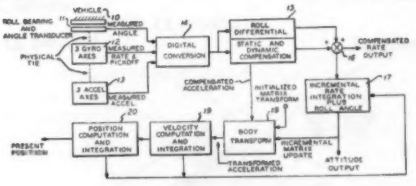
INERTIALLY DECOUPLED STRAPDOWN SYSTEM

Murray S. Goldstein, Spring Valley, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Oct. 16, 1978, Ser. No. 952,016

Int. Cl.[3] F41G *7/00;* F42B *15/02;* G06F *15/50*

U.S. Cl. 244—3.2 **10 Claims**



1. A strapdown gyro inertial system comprising:

means for transporting said strapdown inertial system,

means affixed to said transporting means and mounted along the roll axis thereof,

means having angular rotation along said roll axis mounted to said fixed means, and

gyro means skewedly mounted with respect to said roll axis on said means having angular rotation whereby said means having angular rotation provides angular readout to add to gyro output and provides a reference for calibration of said strapdown gyro inertial system.

4,262,862

APPARATUS FOR CHANGING THE WING POSITIONS OF SWINGABLE WINGS OF A MISSILE

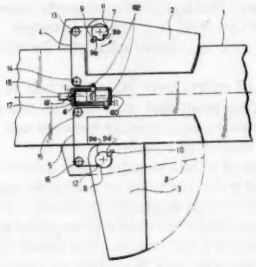
Horst Hütter, Tegernsee, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschraänkter Haftung, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,490

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 7804927[U]

Int. Cl.³ F42B *13/32*

U.S. Cl. 244—3.29 **6 Claims**



1. A missile, comprising a missile body having wings, which are pivotally mounted on said body and being pivotable between an inwardly swung position in which the wings extend inwardly of the body and an outwardly swung position in which the wings extend outwardly from the body, a fluid pressure operated piston and cylinder mounted on said body and having a piston movable in said cylinder, and cables connected between each of said wings and said piston being movable with said piston to swing said wings outwardly, said piston and cylinder combination being centrally positioned between said wings, including cables connected to each of said wings, and means for guiding said cables between said piston and said wings so that the wings move outwardly and inwardly by linear movement of said pistons.

4,262,863

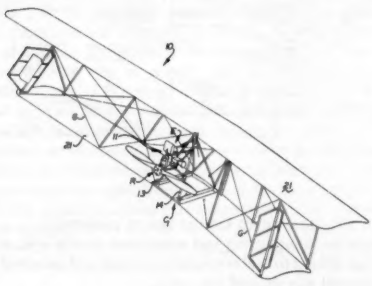
POWERED HANG GLIDER WITH REDUCTION DRIVE

Charles J. Slusarczyk, 4200 Royalton Rd., Brecksville, Ohio 44141

Filed Jan. 16, 1978, Ser. No. 869,833

Int. Cl.³ B64C *1/16*

U.S. Cl. 244—13 **3 Claims**



1. In a powered hang glider which is foot-launched by a single occupant for flight in the cruising speed range from about 25 miles per hour (mph) to about 35 mph, and foot-landed at the end thereof, comprising an air-frame and a two-cycle internal combustion engine mounted in said air-frame which includes an occupant positioning means supported for flight by at least one wing member, and said positioning means includes at least two elongated members symmetrically disposed about a vertical plane through the longitudinal axis of said hang glider, the improvement comprising,

a reduction drive unit drivingly engaging said engine which operates in the range from about 5000 rpm to about 10,000 rpm, with a fixed pitch relatively large diameter propeller in the range from about 0.9 meter to about 1.4 meters, said reduction drive unit including:

(i) a relatively small drive means fixedly disposed near one end of the crankshaft of said engine,

(ii) a relatively large driven means fixedly disposed for rotation with a propeller shaft mounted for rotation in a first bearing means,

(iii) a reduction mount removably secured to said engine, for mounting said first bearing means in transversely spaced apart relationship with said engine so that the longitudinal axis of said first bearing means is no further than 25.4 cm from the axis of rotation of said crankshaft, said propeller shaft being slightly offset at an angle less than 5° from said longitudinal axis, wherein said reduction mount comprises,

(a) a platform mounting member directly secured to said engine,

(b) aligned oppositely disposed stub mounts fitted with vibration damping means between said mounting means and said elongated members, and between said mounting means and said reduction mount, to damp vibrations of said engine and said propeller, said stub mounts extending from said platform,

(c) a bearing housing for said first bearing means for said propeller shaft, said bearing housing extending downwardly from said platform member to support said propeller shaft offset less than 5° from the longitudinal axis of said hang glider,

(iv) driving means for drivingly engaging said small drive means and said large driven means so as to rotate said propeller in the range from about 2500 rpm but less than 5000 rpm, and

(v) mounting means for selectively mounting said engine in said air frame, fore or aft on said elongated members of said positioning means.

4,262,864

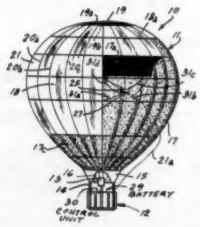
SOLAR BALLOON MANEUVERING SYSTEM

Fredrick Eshoo, 151 Kakh Ave., Tehran, Iran

Continuation-in-part of Ser. No. 860,711, Dec. 15, 1977, Pat. No. 4,174,082. This application Mar. 14, 1979, Ser. No. 20,549

Int. Cl.³ B64B *1/58*

U.S. Cl. 244—31 **3 Claims**



1. A solar hot air balloon having a maneuvering system for ascent and descent, comprising:

(a) an envelope;

(b) a gondola suspended from the envelope;

(c) a highly translucent portion of the envelope;

(d) an opaque portion of the envelope, said opaque portion having a substantially light absorbing inner surface within

the envelope positioned so as to receive a substantial portion of sunlight passing through the translucent portion;

(e) maneuvering system means for rotating the balloon about a vertical axis relative to level flight for controlling the amount of sunlight received by said light absorbing inner surface and for controlling ascent and descent;

(f) said maneuvering system means comprising a first propulsion means disposed on a side of the envelope; and

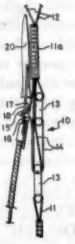
(g) said maneuvering system means including at least four light sensors positioned in spaced relationship around the balloon and circuitry means for simultaneously activating only two of said light sensors for automatically maintaining the balloon at a rotational position associated with the activated light sensors, said two sensors being positioned on opposite sides of the envelope.

4,262,865

HARNESS RELEASE MECHANISM

David R. Smith, Sydney, Australia, assignor to Parachutes Australia Pty. Ltd., Sydney, Australia

Filed Jan. 17, 1979, Ser. No. 4,230
Int. Cl.³ B64D *17/30*
U.S. Cl. 244—151 A **10 Claims**



1. A parachute release mechanism for an assembly that includes a main parachute canopy, a separate reserve parachute canopy and a parachute harness to be worn by a parachutist, the release mechanism comprising:

a harness connector for releasably connecting the main parachute canopy to the parachute harness, and actuating means for sequentially actuating release of the main canopy from the harness connector and for then effecting deployment of the reserve parachute canopy from a container therefor;

the actuating means comprising:

first cable means so connected to the harness connector that when the first cable means are pulled to a first predetermined extent, this effects release of the main canopy from the harness connector;

second cable means movable for effecting deployment of the reserve canopy;

connecting means for providing a relative sliding interconnection of the first and second cable means, such that the first cable means may be pulled at least to the first predetermined extent while the first cable means slides past the second cable means; the connecting means also including means for effecting movement of the second cable means when the first cable means has been pulled to an extent exceeding the first predetermined extent, which is the movement of the second cable means that effects deployment of the reserve canopy, whereby the reserve canopy is deployed after release of the main canopy and the connecting means being adapted to further permit the reserve canopy deployment movement of the second cable means independently of movement of the first cable means, whereby the reserve canopy can be deployed without first releasing the main canopy.

4,262,866

KITE HAVING HIGH LIFT TO DRAG RATIO

Warren O. Weathers, 17707 SE. Howard St., Milwaukie, Oreg. 97222

Filed Oct. 9, 1979, Ser. No. 82,869
Int. Cl.³ B64C *31/06*
U.S. Cl. 244—153 R **9 Claims**

1. A kite comprising a central section of flexible material having sides, a front end, and a rear end;

outer longerons extending respectively along the sides of said central section and a central longeron extending along the center of said central section;

wing means of flexible material and having a substantially triangular configuration extending along the respective sides of said central section;

keel means extending along the respective sides of said central section and onto which a bridle means can be secured;

spar means having ends thereof connected to apexes of said wings, extending across said kite and through said keel means to maintain said kite in a flying condition with said longerons above said spar means; and

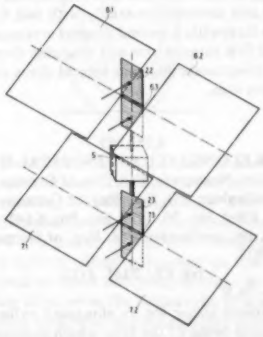
spar pole means extending between said spar means and said central longeron to form said central section into an inverted substantially V-shaped canopy with said central longeron extending above said outer longerons.

4,262,867

APPARATUS FOR MODIFYING POSITION AND ATTITUDE OF A SPACECRAFT

Helmut Piening, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 763,634, Jan. 28, 1977, abandoned. This application Dec. 21, 1978, Ser. No. 971,786
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 2604005
Int. Cl.³ B64G *1/25*
U.S. Cl. 244—168 **10 Claims**



1. An apparatus for modifying the position and attitude of a spacecraft subject to solar radiation and having a body with outer walls, comprising solar radiation responsive means responsive to pressure from the solar radiation directed toward

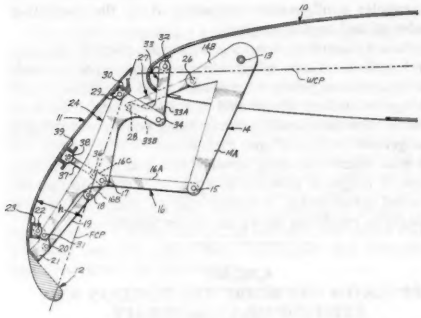
the satellite body, support means for movably mounting said radiation responsive means on the body outside the walls at positions offset from the center of gravity of the body, and for adjusting the radiation responsive means so as to change the area of normal incidence of radiation upon said radiation responsive means, said radiation responsive means including a pair of panels and a plurality of sheets, said panels being mounted away from the body and including a pair of stems mounted on each one of said panels, said stems articulatably supporting said sheets on said panels, said stems each having an axis in the plane of one of the panels, said panels being rotatably mounted on the body about a second axis transverse to the first axis, said stems having portions extending beyond the panels, said sheets being mounted for rotation on the portions of said stems extending beyond the panels.

4,262,868

THREE-POSITION VARIABLE CAMBER FLAP

Roy D. Dean, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 29, 1979, Ser. No. 43,415
Int. Cl.[2] B64C *3/50*
U.S. Cl. 244—214 **4 Claims**



1. A linkage mechanism for extending a flap from a stowed position within the undersurface of an airfoil to a forward and downward extended operating position, comprising: a first support arm mounted to a trailing edge portion of said flap and connected to fixed structure at the leading edge portion of the airfoil; a first drive arm mounted to fixed structure of the airfoil, aft of said first support arm, for rotation in a chordwise plane; a drive link connected at one end to said first drive arm and connected at the other end to a mid-section of the flap; a second drive arm mounted co-axially with said first drive arm and rotatable therewith; a second support arm mounted co-axially with said first support arm and rotatable therewith; and a support link interconnecting said second drive arm with said second support arm.

4,262,869

CLAMP FOR ELONGATED CYLINDRICAL WORKPIECE

Arnold Menshen, Neuenrade, Fed. Rep. of Germany, assignor to Walter Stauffenberg KG, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,642
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 7831579[U]
Int. Cl.[3] F16L *3/10*
U.S. Cl. 248—74 R **5 Claims**

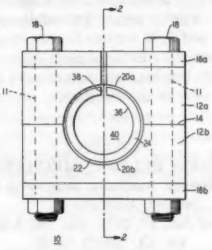
1. An improved clamp for an elongated cylindrical workpiece, said clamp being of the type which comprises:

a cylindrical, elastic member for placement about the workpiece to be clamped; and

first and second substantially identical clamping members each having a semi-cylindrical recess for mating engagement about said elastic member, thereby to clamp said workpiece, wherein the improvement comprises:

an elevated, axially-extending, central region in the outer peripheral surface of said elastic member; and

a corresponding, depressed, axially-extending, central region in the inner peripheral surface of each of said clamping members, the radial height of said extended region being greater than the radial height of said depression thereby forming an axially-extending gap between said



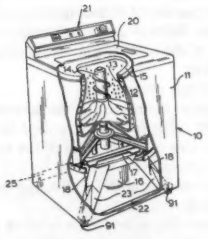
elastic member and said first and second clamping members, on both sides of said central regions whereby, whenever said first and second clamping members are urged together to clamp said workpiece, the elevated central region of said elastic member is compressed, causing said central region to flow elastically in both directions into said axially extending gaps thus establishing a pressure gradient in said workpiece that steadily decreases in both directions, away from said central regions.

4,262,870

RETRACTABLE SELF-LEVELING SUPPORT ASSEMBLY FOR AUTOMATIC WASHER

Gerald L. Kretchman, and Russell J. Morrison, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 11, 1979, Ser. No. 56,683
Int. Cl.[3] F16M *11/20*
U.S. Cl. 248—188.3 **12 Claims**



1. In a self-leveling weight support assembly having a horizontal frame with upwardly diverging slots at opposite ends thereof, pins slidably engaged in said slots and connecting downwardly extending feet to opposite ends of a horizontal connecting member, the improvement comprising:

said connecting member including:

two slidably engaged partially overlapping arms, biasing means connected to each of said arms opposing horizontal expansion thereof, limiting means integrally formed on each arm to limit expansion of said connecting member, and

retaining means removably receivable in said connecting member and said frame to retain said connecting member in an expanded position,

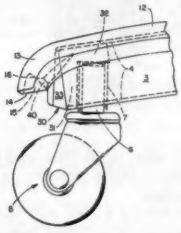
whereby said feet are maintained adjacent said frame when said connecting member is expanded and said retaining means is received, and said feed are each extended from said frame a distance to compensate for an uneven supporting surface engaging said feet when said retaining means is removed.

4,262,871

PLASTIC ENCAPSULATED BASE

Stephen B. Kolk, Grand Rapids, and Kenneth W. Hozeski, Grandville, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Apr. 6, 1979, Ser. No. 28,047
Int. Cl.³ F16M *11/20*
U.S. Cl. 248—188.7 **17 Claims**



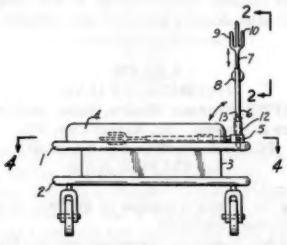
1. A pedestal type chair base including a central hub, radiating base arms with open sockets at the end thereof and separate plastic cover means including base arm covers covering said base arms, the improvement comprising: each base arm cover including means securing it to said base at said hub; a plug extending into said socket; said base arm cover extending out over said end of said base arm, defining an overhang at least partly covering said plug and having an under surface projecting away from said plug; fastening means extending through said overhang from said under surface thereof and into said plug to thereby secure said base arm cover in place.

4,262,872

COLLAPSIBLE POLE ASSEMBLY

Reuben P. Kodet, Manitowoc, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 28, 1979, Ser. No. 15,978
Int. Cl.³ A47K *1/08*
U.S. Cl. 248—311.3 **18 Claims**



1. A collapsible pole assembly for connection to a patient carrying device comprising: a shank pivotally connected to a supporting base; a coupler longitudinally slidable along the shank; a pole rigidly attached to the coupler to form a sliding unit, said pole being laterally offset from the shank and movable to different sides of the shank without movement of the supporting base; and a lock on the assembly which is slidably engaged by the unit.

4,262,873

PLANT HANGER

Vivian L. Prenger, Santa Ana, Calif., assignor to Accent Industries, Santa Ana, Calif.

Filed Jun. 7, 1979, Ser. No. 46,555
Int. Cl.³ A47H *1/10*
U.S. Cl. 248—318 **3 Claims**

1. A plant hanger comprising:

means forming a base for supporting a plant receptacle, said base including a portion which extends below said plant receptacle to support said receptacle and being formed of a knotted yarn network which is sufficiently flexible to conform, without adjustment, to plant receptacles of varying sizes and shapes and to allow removal of said receptacle without adjustment;

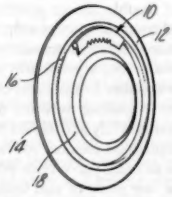
a ring; and p1 plural elongate, flexible support members, each formed of a knotted yarn network and attached at one end to said base-forming means, the other end of all but one of said support members being removably attachable to said ring by a hook, and the other end of said one of said support members being non-removably attached to said ring.

4,262,874

PLATE HANGER

William Seigh, 25065 Castlereigh, Farmington Hills, Mich. 48018

Filed Mar. 19, 1979, Ser. No. 21,582
Int. Cl.³ A47F *7/14*
U.S. Cl. 248—467 **4 Claims**



1. A hanger assembly for hanging a plate on a wall comprising; a body portion in the form of an arc of an annulus, said body portion including a first arcuate flange, a second arcuate flange spaced from said first arcuate flange, said second flange having a radial width greater than said first flange and forming a flat surface, a layer of adhesive disposed on said flat surface and being adapted to bond said body portion to the bottom surface of a plate adjacent to the bottom rim of said plate, said first flange having uniformly spaced adjacent notches formed in an inner circumferential portion of said arcuate flange and in axially spaced relationship to said layer of adhesive, a hanger element adapted to be supported on a wall to receive a selected one of said notches, said hanger element having a head portion

disposed in the space between said first flange and layer of adhesive.

4,262,875

INFORMATION RECORD STAMPERS

Frederick R. Nyman, Carmel, and Thomas E. Smith, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,306
Int. Cl.³ B29C *1/04;* B29D *17/00*
U.S. Cl. 249—114 R **5 Claims**

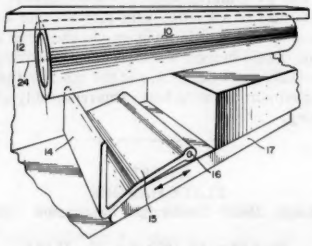
1. A scratch resistant nickel stamper containing audio and video information in the form of a submicron size surface relief pattern on a surface thereof coated with an about 100–220 angstroms thick, vapor deposited, conformal, chromium containing layer.

4,262,876

VALVE FOR FLEXIBLE TUBING AND METHOD

Arnold F. Willatt, 238 D St., San Raphael, Calif. 94901

Filed Apr. 9, 1979, Ser. No. 28,526
Int. Cl.³ F16K *13/00*
U.S. Cl. 251—9 **1 Claim**



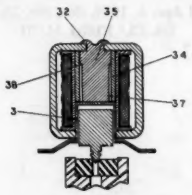
1. In a valve for rapidly and effectively controlling a reversing flow of fluid in flexible conduit means, an elongate base member, a transverse pivot support spaced from said elongate member, a length of flexible tubing positioned between said base member and said transverse pivot support, pivotally movable compression means mounted on said pivot support, said compression means including a pivot arm portion and a protruding compression member in the form of a transverse substantially flat member extending outward from said arm portion so as to extend transversely across said flexible tubing, said substantially flat compression member movable along an arcuate pathway between an outer valve-open position and an inner valve-closed position, the plane of said substantially flat compression member being perpendicular to the axis of said flexible tubing member in said valve-closed position, an incline member movable generally parallel to said base member and flexible tubing and slidably engageable with said compresion means to move said pivot arm portion and said compression member between valve-open and valve-closed positions, and means to periodically control the slidable movements of said incline member to effect periodic pivotal movements of said compression means between a valve-closed position in which said compression member squeezes and deforms the intervening flexible tubing to a fluid restricting closed position and a valve-open position in which said compression member is spaced from said base member sufficiently to release the tubing to a normal extended valve-open position.

4,262,877

SOLENOID FLUID VALVES

Gregor L. Lang, 295 East St. S., Suffield, Conn. 06078

Continuation of Ser. No. 576,167, May 9, 1975, Pat. No. 4,046,351, which is a continuation of Ser. No. 215,052, Jan. 3, 1972, abandoned, which is a continuation-in-part of Ser. No. 830,342, Jun. 4, 1969, Pat. No. 3,647,177. This application Sep. 2, 1977, Ser. No. 830,347
The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.
Int. Cl.³ F16K *31/06;* H01F *7/13*
U.S. Cl. 251—141 **2 Claims**



1. A solenoid fluid valve of the class used for control of the flow of gases or liquids under pressure in a closed system including in combination:

valve body means having a fluid duct therethrough, valve seat means intermediate said duct having a fluid passage therethrough forming a flow orifice; and

adjacent solenoid operating means having a coil with a ferrous core and a ferrous plunger armature extending therein, an end of said core forming a planar magnetic pole juxtaposed one end of said armature, and a ferrous structure exterior of said coil forming with said core and said armature a loop magnetic circuit; and

said armature having a portion adapted for sealing engagement with said orifice, and being operatively disposed within a unitary housing extending within said coil;

the improvement thereof comprising,

an armature housing of tubular construction having one end closed by a transverse diaphragm portion and extending within said coil with said diaphragm portion substantially abutting said planar end of said core and defining the energized limit of travel of said armature effected by striking directly thereagainst; and

said housing being constructed of thin ferrous material of substantially the same wall thickness throughout the tubular length thereof; and

arranged as a saturable magnetic shunt or shield acting to divert and bypass around said armature a major portion of the residual flux persisting in said loop magnetic circuit after deenergization of said solenoid.

4,262,878

HYDRAULIC VALVE

Joseph M. O'ffill, Shawnee Mission, Kans., assignor to Shale Oil Science & Systems, Inc., Kansas City, Mo.

Filed Jul. 20, 1979, Ser. No. 59,231
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—175 **4 Claims**

1. A valve for closing a conduit or the like, comprising:

valving structure including

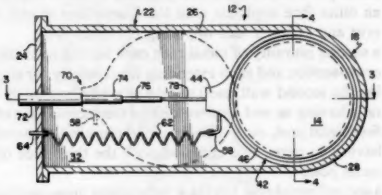
a deflectable diaphragm presenting one face for communication with said conduit or the like, and an opposed, other face; and

means for supporting said diaphragm including a rigid, essentially non-deflectable backing element in opposed relationship to said diaphragm and adjacent said other face thereof, said element and diaphragm being substantially coextensive and defining at least in part a pressure chamber therebetween;

means for engaging and supporting said element at a re-

gion thereon remote from said diaphragm during shifting of said valving structure.

means for shifting said valving structure between a first position wherein said diaphragm is oriented for closing of said conduit or the like upon deflection of the diaphragm, and a second position wherein said conduit or the like is open for material flow therethrough;



means including a fluid flow passageway through said element and communicating with said chamber for passing a pressure-creating fluid into said chamber for deflecting said diaphragm in a sealing direction generally away from said backing element for closing of said conduit or the like when the diaphragm is in said first position thereof,

said valving structure being essentially free of deflection movement under the influence of said fluid, except for said deflection of said diaphragm in said sealing direction.

4,262,879

APPARATUS FOR SWITCHING FLUID FLOW

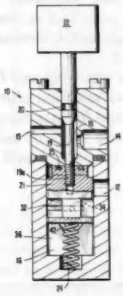
Winfried Gönner, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,691

Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823775

Int. Cl.³ F16K *31/44, 1/00, 17/04*

U.S. Cl. 251—230 **8 Claims**



1. Apparatus for switching fluid flow comprising:

a housing having first and second fluid ports,

said housing defining a chamber, a bore in communication with said chamber, and a sealing face in said chamber about said bore, said first and second fluid ports lying in communication with said chamber and said base respectively,

valve means carried by said housing including a valve body in said chamber and seal means carried by said valve body, said valve body being movable in a linear direction in said chamber between a first position with said seal means engaging said sealing face to prevent fluid communication between said bore and said chamber and a second position spaced from said sealing face providing for fluid communication between said bore and said chamber, said valve body having a slot extending transversely to the direction of movement thereof,

actuating means carried by said housing and coupled to said valve body for moving said valve body alternately between said first position and said second position,

means for biasing said valve body for movement toward one of said first and second position,

means fixed in and forming a integral part of said housing for locking said valve body in said one of said first and second position and releasing said valve body from said one of said first and second positions respectively in response to consecutive actuation of said actuating means, said locking means including a cam carried by said housing and having first and second cam track sections, said first cam track section being inclined to the direction of movement of said valve body, and

a pin, received in said slot in following engagement with said cam track sections, said pin being slidably laterally in said slot in response to movement of said valve body in a first direction from said first position towards said second position and following engagement of said pin along said first cam track section, said pin engaging along said second cam track section to lock said valve body in said second position in response to further movement of said valve body.

4,262,880

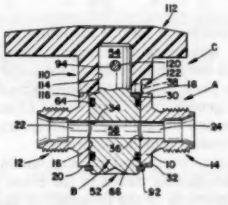
PLUG VALVE

Oliver L. Danko, Chesterland; William C. Steiss, Parma; William H. Amor, Jr., Auburn Twp., Cuyahoga County; William P. Tobbe, Lyndhurst; Thomas J. Gardner, Willoughby, and Earl D. Shufflebarger, Mentor, all of Ohio, assignors to Nupro Company

Filed Jun. 29, 1979, Ser. No. 53,549

Int. Cl.³ F16K *51/00*

U.S. Cl. 251—288 **10 Claims**



7. A plug member for a plug valve comprising: an elongated generally cylindrical plug portion having an outer surface and opposite stem and locking ends, circumferential seal receiving grooves adjacent said stem and locking ends, seals received in said seal receiving grooves, a circumferential snap ring receiving groove in said outer surface between said locking end and said seal receiving groove which is adjacent said locking end, a lateral flow passage through said plug portion intermediate said seal receiving grooves and having inlet and outlet ends, a continuous groove in said outer surface intermediate said seal receiving grooves and intermediate said inlet and outlet ends, said continuous groove having generally parallel inner and outer side walls and a bottom wall, said inner side wall having a depth greater than the depth of said outer groove side wall such that said groove bottom wall tapers inwardly away from said plug portion outer surface in a direction from said outer groove side wall toward said inner groove side wall and does not extend perpendicular to either of said groove side walls, a continuous seal received in said continuous groove and encompassing a closed seal area for sealingly surrounding an inlet passageway in a plug valve body, a pressure relief groove in said outer surface extending from said outlet end of said flow passage over a short circumferential arc on the opposite side of said outlet end from said continuous groove, said outer surface being smooth and ungrooved adjacent said inlet and outlet

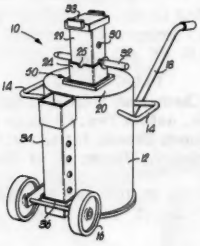
ends of said flow passage except for said pressure relief groove, an integral stem extending outwardly from said stem end, a handle secured to said stem and having a generally flat face extending generally radially outwardly beyond said outer surface of said plug portion, a recess in said flat face for receiving a projection on a valve body, said recess having opposite stop surfaces spaced over an arc for cooperation with a projection on a valve body to limit rotation of said plug member over an angle generally the same as the angle between the center of said closed seal area and the center of said inlet end of said flow passage, and said recess and stop surfaces having a predetermined relationship to said inlet and outlet ends and said continuous seal for insuring proper installation of said plug portion in a plug body.

4,262,881

BOTTLE JACK ANTI-BIND STRUCTURE FOR RECTANGULAR LIFT POST

Joseph L. Gray, St. Joseph, Mo., assignor to Gray Manufacturing Co., Inc., St. Joseph, Mo.

Filed Jul. 25, 1979, Ser. No. 60,746
Int. Cl.³ B66F *3/24*
U.S. Cl. 254—93 R **6 Claims**



1. In article-moving apparatus including an elongated, axially reciprocal, transversely rectangular ram, means operatively coupled to the ram for shifting the same as desired, and means including plate structure defining a ram-clearing opening conforming generally in shape to the cross-sectional configuration of the ram for guiding the reciprocal travel of said ram, the improvement which comprises:

structure for preventing load-induced binding between said ram and said guiding means in the event said ram is deflected transversely of the longitudinal axis thereof,

said bind-preventing structure including bearing means disposed between said ram and guide means for engaging each of the latter, said bearing means being mounted in said disposition for limited rocking movement about an axis transverse of the longitudinal axis of said ram,

said bind-preventing structure including at least one U-shaped element disposed with the bight thereof for said engagement, and with the legs thereof respectively disposed adjacent opposite faces of said opening-defining plate structure.

4,262,882

FENCE STRUCTURE HAVING IMPROVED CORNER CONSTRUCTION

Lee A. Simcoe, and Mathew C. Miller, both of Tucson, Ariz., assignors to American Fence Co., Inc., Phoenix, Ariz.

Filed Nov. 26, 1979, Ser. No. 97,136
Int. Cl.³ E04H *17/16*
U.S. Cl. 256—22 **5 Claims**

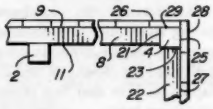
1. A fence structure including at least a first and second fence wall intersecting one another at a corner, comprising:

a. a first metal post having a rectangular cross-section and extending vertically along the corner, said first metal post having first, second, third, and fourth vertically oriented faces, the first and second faces being perpendicular to one another, the first and third faces being parallel to one another, and the second and fourth faces being parallel to one another;

b. a first plurality of metal rails each having a rectangular cross-section and each extending horizontally for supporting the first wall, each of said first plurality of metal rails having an end butt-welded to the first face of said first metal post, each of said first plurality of metal rails having an outer face coplanar with the fourth face of said metal post and an inner face opposing the outer face;

c. a second plurality of metal rails each having a rectangular cross-section and each extending horizontally for supporting the second wall, each of said second plurality of metal rails having an end butt-welded to the second face of said first metal post, each of said second plurality of metal rails having an outer face coplanar with the third face of said metal post;

d. a second metal post having a rectangular cross-section and



extending vertically adjacent the inner face of each of said first plurality of metal rails, said second metal post being lap-welded to the inner face of each of said first plurality of metal rails for supporting the first wall;

e. a third metal post having a rectangular cross-section and extending vertically adjacent the inner face of each of said second plurality of metal rails, said third metal post being lap-welded to the inner face of each of said second plurality of metal rails for supporting the second wall;

f. a first and a second plurality of panels, at least one of said first plurality of panels intimately contacting the fourth face of said metal post, and at least one of said second plurality of panels intimately contacting the third face of said metal post; and

g. attaching means for attaching said first plurality of panels to the outer faces of said first plurality of metal rails to form the first wall and for attaching said second plurality of panels to the outer faces of said second plurality of metal rails to form the second wall.

4,262,883

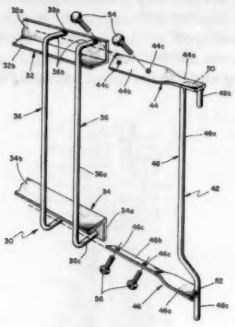
FENCE CONSTRUCTION FOR LIVESTOCK

Ronald H. Feeken, Comfrey, Minn. 56019

Filed Nov. 13, 1979, Ser. No. 93,306
Int. Cl.³ E04H *17,16*
U.S. Cl. 256—25 **13 Claims**

1. A fence construction comprising upper and lower angle members having vertical and horizontal flanges, and a plurality of vertical rod members having straight shank portions and angled end portions, the extremities of said end portions being welded to said vertical flanges at locations spaced vertically

from said horizontal flanges and said shank portions being welded to the free edges of said horizontal flanges so that said



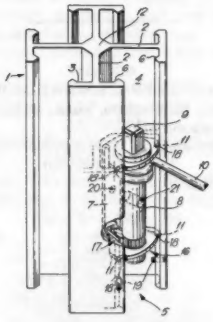
shank portions are spaced horizontally from said vertical flanges.

4,262,884

FENCING WITH LINE WIRE TENSIONER

Julian R. H. Binns, and Kenneth H. Grange, both of London, England, assignors to Binns Fencing Limited, London, England

Filed Nov. 13, 1979, Ser. No. 94,182
Int. Cl.[3] E04H *17/02*
U.S. Cl. 256—42 **6 Claims**



1. Fencing comprising: a fence post to be retained in an upright position and having a channel extending longitudinally thereof; a line wire tensioner mounted in said channel and slidable along the channel to a desired height, said tensioner including a vertically disposed pin rotatable to tension said line wire; and retaining means to retain the tensioner at a said desired height, said retaining means comprising a screw mounted on the tensioner, said screw being positioned to engage said post when the screw is tightened whereby to prevent movement of the tensioner along the channel.

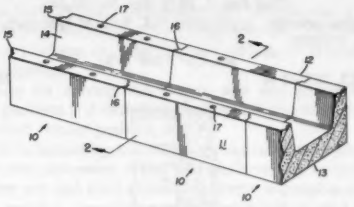
4,262,885

PREFABRICATED CONSUMABLE BLAST FURNACE RUNNER

Micheal D. LaBate, 115 Hazen Ave., Ellwood City, Pa. 16117

Filed Feb. 21, 1980, Ser. No. 123,369
Int. Cl.[3] C21B *7/14*
U.S. Cl. 266—196 **12 Claims**

1. A hot metal runner unit comprising an elongated trough-like body member having a base and spaced parallel upstanding side sections wherein said runner unit is a solid compacted heat dried shape of consumable and disintegrable material having a



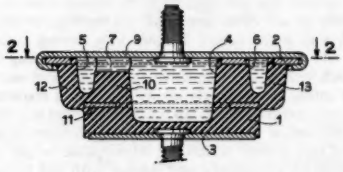
predetermined lifetime when subjected to molten metal flowing therethrough.

4,262,886

ELASTICALLY YIELDABLE BLOCK STRUCTURE, IN PARTICULAR FOR THE SUSPENSION OF AN ENGINE OF A VEHICLE

Robert Le Salver, Chanteloup les Vignes, and Dominique Poupard, Chaville, both of France, assignors to Automobiles Peugeot and Societe Anonyme Automobiles Citroen, both of Paris, France

Filed Nov. 28, 1979, Ser. No. 98,045
Claims priority, application France, Dec. 7, 1978, 78 34493; Aug. 3, 1979, 79 19942
Int. Cl.[3] F16F *9/10*
U.S. Cl. 267—8 R **15 Claims**



1. An elastically yieldable block structure comprising a moulded block of elastomer having a first face and a second face opposed to the first face, a first armature connected to the block adjacent said first face and a second armature connected to the block adjacent said second face, at least two cavities in the block each of which cavities extends from said first face toward said second face, a liquid filling the cavities, the cavities comprising a main centre cavity which is laterally defined by walls which are part of the block and have a high resistance to the inner pressure of the liquid and has a closed end between said first and second faces and at least one lateral cavity, at least one groove in said first face of the block and putting the lateral cavity in communication with the centre cavity, the lateral cavity being defined laterally by lateral walls which are part of the block and have at least a portion which has a low resistance to the inner pressure of the liquid which is lower than said high resistance, the lateral cavity having a closed end remote from said first face, said cavities and the groove having surfaces having a draft throughout their extent from said first face so as to permit an easy withdrawal of a single mould from said first face of the block, a single closing plate in contact with portions of the block delimiting in said first face the centre cavity, the lateral cavity and the groove and thereby closing the cavities off from each other except in the region of the groove, and means fixing said plate against said first face of the block.

4,262,887

FRICTION SPRING UNIT

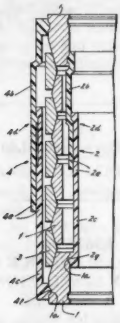
Harry Jansen, Moers, Fed. Rep. of Germany, assignor to Ringfeder GmbH, Krefeld-Uerdingen, Fed. Rep. of Germany

Filed Jun. 1, 1979, Ser. No. 44,548

Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918091

Int. Cl.[3] F16F 1/06

U.S. Cl. 267—9 A 15 Claims



1. A friction spring unit, particularly for sleeve buffers or push-pull devices of intermediate buffer couplings of rail vehicles, comprising a friction spring including a plurality of inner rings and outer rings having conical contact surfaces cooperating with one another with interposition of a lubricant, said friction spring having an axis and two axial ends; an inner casing element located inwardly of said inner rings and shielding the latter from inside, said inner casing element having two axially spaced end portions; an outer casing element located outwardly of said outer rings and surrounding the latter from outside, said outer casing element also having two axially spaced end portions, said plurality of rings including two end rings each located at a respective one of said axial ends of said friction spring and sealingly connected with a respective one of said end portions of said inner casing element and said outer casing element; at least one of said casing elements being composed of two sleeves which are telescopable in one another; and means for connecting said sleeves with one another and including two collars each provided on a respective one of said sleeves and cooperating with one another so as to limit an axial outward displacement of said friction spring, said connecting means being elastically deformable so as to allow expansion and compression of said sleeves during their connecting with one another.

4,262,888

ARRANGEMENT FOR THE ABSORPTION OF FORCES

Harry Jansen, Moers, and Bernd Kerntopf, Tönisvorst, both of Fed. Rep. of Germany, assignors to Ringfeder GmbH, Krefeld-Uerdingen, Fed. Rep. of Germany

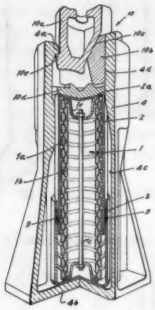
Filed Jun. 1, 1979, Ser. No. 44,550

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1979, 2918094

Int. Cl.[3] F16F 3/10

U.S. Cl. 267—9 A 13 Claims

1. An arrangement for resiliently absorbing forces, particularly for an intermediate buffer coupling of rail vehicles, comprising an elongated housing having two spaced ends and an axis, one of said ends being closed, whereas the other of said ends is open and has an opening; a friction element located in the region of said open end of said housing; a resilient element cooperating in series with said friction element and located in a portion of said housing which is spaced from said open end in a direction of elongation of the latter, said opening of said housing having a transverse dimension which is smaller than the inner transverse dimension of said portion of said housing in which said resilient element is located, said resilient element being formed as a friction spring having a plurality of inner conical rings and a plurality of outer conical rings which cooperate with one another with interposition of a lubricant; outer and inner cup-shaped casing members in said housing and telescopable in one another, said cup-shaped members closably accommodating said friction spring and being sealed relative to



one another, said inner cup-shaped member having an outer diameter corresponding to the transverse dimension of said opening at said open end of said housing, said outer cup-shaped member being separated in a longitudinal direction into a plurality of parts which are tightly held together; and means for holding said parts of said outer cup-shaped member together.

4,262,889

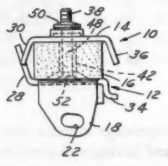
ELASTOMERIC ENGINE MOUNT

Charles D. Moore, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 18, 1979, Ser. No. 49,530

Int. Cl.[3] F16M 1/02

U.S. Cl. 267—140.5 6 Claims



1. An engine mount comprising:

a lower bracket connectible to a frame of a motor driven vehicle;

an elastomeric block interposed between the upper and lower bracket and bonded to said brackets;

said elastomeric block comprising elastomeric material and elongated individual fibers of fibrous material embedded therein in substantially horizontal and parallel directions such that the rate of resilient deflection is shear of said engine mount is higher in one horizontal direction than in a transverse horizontal direction;

wherein said upper bracket has opposing depending flanges spaced apart from said elastomeric block and extending parallel to the longitudinal direction of said fibers such that upon a predetermined amount shear, one of said flanges abuts said elastomeric block and constructed to halt further shearing of said elastomeric block.

4,262,890
SKI HOLDER

Paul Sisko, 161 Main St., Ridgefield Park, N.J. 07660, and Robert Lehman, 99 Lloyd Rd., Montclair, N.J. 07042

Filed Mar. 10, 1980, Ser. No. 129,113
Int. Cl.[3] B25B *11/00*
U.S. Cl. 269—21 5 Claims

1. A portable holder for use in spaced relation with a similar holder as a ski support for releasably engaging a ski for maintenance operations at a work station comprising the combination of:

a holder body portion;

clamping means on said body portion for removably mounting the holder at a work station;

a vacuum ski gripping means comprising a resilient pad and control means for causing the pad to assume an upwardly forcing concave shape;

an open top hollow member mounting said pad;

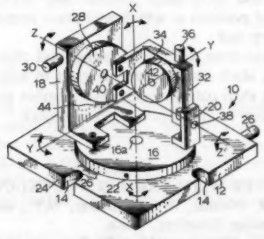
said control means including a bearing on said pad and a crank operatively coupled to said bearing and pivotally mounted on said hollow member; and

said crank pivotally mounting said hollow member on said body portion.

4,262,891
THREE DIMENSIONAL POSITIONABLE WORKPIECE SUPPORT TABLE

Charles G. Kinney, 1991 Bethel Blvd., Boca Raton, Fla. 33432

Filed Jun. 4, 1979, Ser. No. 44,946
Int. Cl.[3] B23Q *1/04*
U.S. Cl. 269—71 3 Claims



1. A workpiece support platform for supporting a workpiece in a lockable position for alignment with a cutting or drilling tool or the like to provide alignment with said tool with a reference point relative to the workpiece supported thereupon, comprising:

a base supporting platform;

a rotatable platform connected on top of said base platform;

a first vertical wall connected on said rotatable platform;

a second rotatable platform connected to said vertical wall;

a second vertical wall connected to said first rotatable platform;

a cradle connected on one side pivotally to said second rotatable platform, and on the opposite side pivotally to said second vertical wall;

a third rotatable platform connected to said cradle, the axis of rotation of said first platform, said second platform and said third platform intersecting at a predetermined reference point at a fixed position relative to the surface on said third platform, the third platform utilized for supporting a workpiece;

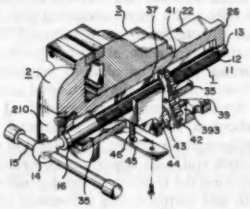
a means for driving and locking said first platform, said second platform and said third platform relative to each other to a desired rotated position; and

means for measuring and indexing relative to each other, the relative movement of said first platform, said second platform and said third platform whereby a complex drilling or grinding operation may be performed on said workpiece based on measuring and indexing information relative to a single predetermined point determined with respect to said workpiece.

4,262,892
QUICK-OPERATING BENCH VISE

Rong-Chun Wu, No. 12, La. 110, Kwung Lung St., Bar Deh Village, Tao Yuan Hsien, Taiwan (334)

Filed Feb. 22, 1980, Ser. No. 123,784
Int. Cl.[3] B25B *5/10*
U.S. Cl. 269—181 2 Claims



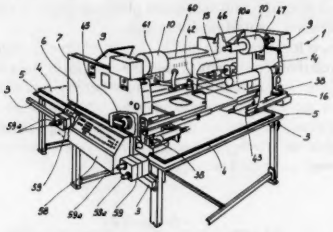
1. A quick-operating bench vise comprising a movable jaw, a fixed jaw, a lead screw for turning to move the movable jaw toward and away from the fixed jaw, and a clutching device operable by said lead screw; the lead screw having a screw thread of sawtooth type in cross section with the vertical surface of the screw thread facing the front end, and a slot longitudinally cut along the entire length of the screw thread; the movable jaw having an elongated slide in which said lead screw is mounted with its front end protruding outwardly, said elongated slide of the movable jaw being slidably inserted in the lower structure of the fixed jaw; the clutching device comprising a half nut urged by a spring toward the lead screw and capable of moving toward and away to engage with and disengage from the lead screw along a radial direction, a driving pinion slidably mounted on said lead screw with a key means fitting in said slot and capable of rotating with the lead screw, a sector gear having teeth around a portion of the circumference for engaging with the driving pinion and the remaining non-toothed portion being of a diameter smaller than that of the root diameter of the toothed portion, and a shaft on which said sector gear is fixedly mounted having a stud eccentrically mounted on the enlarged end thereof; said stud being arranged to substantially correspond with the middle portion of the toothed portion of the sector gear and being capable of engaging with a slot formed on the half nut to push the half nut away from and thus disengage from the lead screw when it revolves less than one turn around the axis of said shaft in one direction, and disengaging from that slot to allow the half nut to move toward and engage with the lead screw by the resilient force of said spring when it revolves less than on turn in the opposite direction.

4,262,893

APPARATUS EFFECTIVE TO TENTER CLOTHES IN SUPERIMPOSED LAYERS

Vincenzo Sgroi, Via A. Volta, 54, 20052 Monza, Italy

Filed Jun. 1, 1979, Ser. No. 44,634
Claims priority, application Italy, Jun. 9, 1978, 24390 A/78
Int. Cl.³ B65H *29/46*
U.S. Cl. 270—31 **17 Claims**



1. An apparatus for tentering cloths or fabrics on benches in superimposed layers, particularly for the garment industry, comprising a motorized carriage, effective to longitudinally slide, by a reciprocating movement, on bench rails and carrying the rolls of fabric or cloth to be deposited on said bench in a tentered form, wherein said carriage comprises a base adhering to said rails and a turret mounted above said base, with motor means of rotation through at least 180° about a vertical axis, said turret comprising, at the top portion thereof, motorized supporting means capable of supporting a cloth roll mounted about a substantially horizontal axis, and, at a lower portion, a depositing roller, also motorized or driven, being mounted about a substantially horizontal axis, thereon is caused to adhere, for a part of the extension thereof, the cloth from said cloth roll, said apparatus comprising, furthermore, means for driving the rotation of the depositing roller, simultaneously with said reciprocating movement of the carriage, for depositing on the bench cloth portions having a length equal to said reciprocation of the carriage, and means responsive to the cloth or fabric movement, at the depositing roller, in order to rotatively drive the cloth roll in such a way as to unwind said cloth, in relation to the depositing roller rotation.

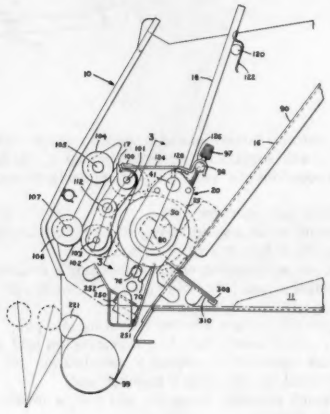
4,262,894

APPARATUS FOR MOVING AN OBJECT, IN PARTICULAR THE TOP SHEET OF A STACK OF INDIVIDUAL SHEETS OF CUT PAPER

Herbert W. Marano, Summit, N.J., assignor to Vydec, Inc., Florham Park, N.J.

Filed Sep. 11, 1978, Ser. No. 941,227
Int. Cl.³ B65H *3/06*
U.S. Cl. 271—4 **9 Claims**

1. Apparatus for moving an object, comprising:
a fixed pivot shaft;
a fixed reaction shaft displaced in a predetermined direction and at a predetermined distance from said pivot shaft;
a motor having a drive shaft;
a drive member provided on said drive shaft for rotation therewith;
means for supporting said motor and said drive shaft for pivotable movement around said fixed pivot shaft towards said object;
a pivot arm having two ends, one end of said pivot arm mounted on said reaction shaft to permit said pivot arm to pivot therearound towards said object, and the other end of said pivot arm having an aperture formed therein and said drive shaft extending through said aperture sufficiently loosely to permit said drive shaft to rotate with respect to said pivot arm;
a clutch mounted on said drive shaft and being in engagement with the other end of said pivot arm with predetermined force, said clutch during energization of said motor to rotate said drive shaft in a predetermined direction of rotation for continuously receiving force from said drive shaft and said received force initially being less than the force of static friction between said clutch and said other end of said pivot arm and said received force subsequently being greater than said force of static friction whereupon said clutch allows said drive shaft to rotate with respect to said pivot arm with said clutch being in dynamic frictional engagement with said other end of said pivot arm, during the times said clutch is in static frictional and dynamic frictional engagement with said other end of said pivot arm, said clutch for continuously applying force to said other end of said pivot arm to continuously produce



torque for causing said pivot arm to pivot around said reaction shaft and toward said object;
upon said pivot arm pivoting towards said object, said other end of said pivot arm continuously applying force to said drive shaft to continuously produce torque for causing said drive shaft and said motor to pivot around said pivot shaft toward said object;
means for stopping said pivoting movement of said motor and said drive shaft towards said object at a predetermined position at which said drive member engages said object; and
upon said drive member engaging said object and upon said drive shaft rotating with respect to said pivot arm, said drive shaft rotating said drive member to cause said drive member to move said engaged object.

4,262,895

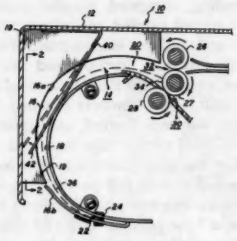
INVERTER WITH VARIABLE BUCKLING CONTROL

Stephen J. Wenthe, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1979, Ser. No. 71,604
Int. Cl.³ B65H *29/58*
U.S. Cl. 271—65 **7 Claims**

1. In a sheet inverter mechanism with sheet feed means for feeding a sheet into and out of a first end of a curved sheet reversing chute, to reverse the lead and trail edge orientation of the sheet, the improvement comprising:
spring means positioned intermediately of said curved sheet receiving chute for intermediately springedly engaging a sheet in said chute for urging said sheet out of said chute wherein said spring means comprises at least one elongated and highly deformable spring member; said spring member in its unsprung condition, chordally intersecting said chute to intersect the movement path of a sheet in said

chute; said spring member being mounted so that an unsupported and highly deformable portion thereof will lightly springedly engage a sheet buckled in said chute, and wherein said chute is sufficiently wide and said spring



members are sufficiently deformable to allow different length sheets to buckle with different buckle heights within the chute unobstructedly except only for said light engagement of the sheet buckle with said spring members.

4,262,896

SUCTION HEAD IN A PAPER SHEET COUNTING MACHINE

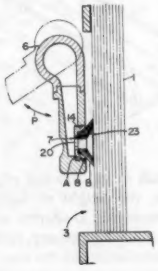
Isamu Uchida, and Akira Hirata, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 61,036

Claims priority, application Japan, Jul. 27, 1978, 53-103809[U]

Int. Cl.³ B65H *5/10*

U.S. Cl. 271—90 **4 Claims**



1. A combined suction head, suction port member, and suction contact member for use with a paper sheet counting machine, the paper sheet counting machine comprising a container box for holding paper sheets and a reciprocative rotation type suction head for vacuum-sucking sheets contained in the box and for taking sucked sheets out of the box one at a time for counting;

said suction head having a suction port defined therein with an inner threaded portion and an outer portion tapered from the inner threaded portion to an outer surface of said suction head;

said suction port member having a bore formed therein with an innermost portion of the bore having an angular configuration, a middle portion of the bar having a cylindrical configuration, and an outer portion of the bore having an outwardly tapered configuration, a first portion of an outer peripheral surface of said suction port member being threaded and a second portion having a taper corresponding with the taper of the outer portion of said suction head so that said suction port member is positioned in and threadedly connected to said suction head; and

said suction contact member being made of a flexible material and having an internal bore with an outwardly tapered outer portion and having an external configuration corresponding to the shape of the middle and outer portions of the bore formed in said suction port member, said suction contact member being positioned in said bore in said suction port member and rigidly connected to said suction port member with the peripheral portion of said suction contact member containing said tapered outer portion of the bore being directly contacted and supported by portions of said suction port member.

4,262,897

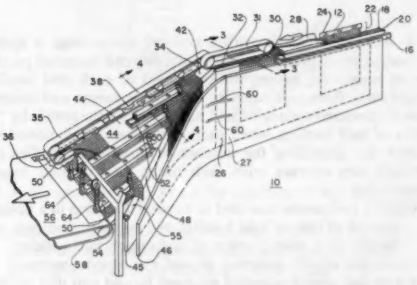
VERTICAL-TO-HORIZONTAL CONVEYOR SYSTEM

Thomas J. Kopacz, Omro, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 1, 1979, Ser. No. 80,629

Int. Cl.³ B65H *29/00*

U.S. Cl. 271—185 **6 Claims**



1. An in-line material conveying system for systematically transferring a continuous supply of flimsy open-mouth plastic bags from a bag making machine to a take-away conveyor, wherein said bag making machine supplies each bag to a pair of horizontally disposed transfer belts in a manner as to cause each bag to be vertically suspended from said horizontal transfer belts; wherein said transfer belts are spaced apart to define a small horizontal width cavity for engaging a bottom margin region of each bag; the bottom margin region extending a chosen distance from a bottom edge of each bag, and the remaining portion of each bag depending unrestrained from the engaged region of the bag; and wherein said take-away conveyor is disposed horizontally with respect to each vertically suspended bag, said system comprising:

(a) a pair of tunnel plates disposed to receive the unrestrained portion of each bag for holding the unrestrained portion in a vertical plane as each bag exits said bag making machine while being transferred by the horizontally disposed transfer belts;

(b) a plow member fixedly mounted to a portion of a top surface of said pair of tunnel plates, in the path of the bottom edge of each bag, for folding over a portion of the bottom margin region of each bag from a vertical orientation to a horizontal orientation as the remainder of each bag is transferred between said pair of tunnel plates by the horizontally disposed transfer belts;

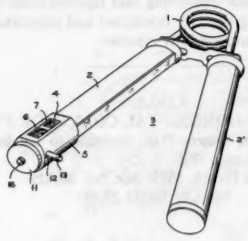
(c) a first pair of vertically disposed endless belts, positioned near another portion of the top surface of said pair of tunnel plates in the path of the horizontally oriented bottom edge of each bag as the bottom region exits said plow member, for further transferring each folded bag between said pair of tunnel plates; and

(d) transition means disposed between said pair of tunnel plates and the horizontally disposed take-away conveyor for transferring each folded bag from said pair of tunnel plates to the horizontally disposed take-away conveyor.

4,262,898
HAND EXERCISER HAVING A COUNTER

Haa W. Lee, 311-78 Mia-dong, Dobong-Ku, Seoul, Rep. of Korea

Filed Jul. 31, 1979, Ser. No. 62,577
Int. Cl.[3] A63B *21/30*
U.S. Cl. 272—68 1 Claim



1. A hand exerciser with a counter comprising, a spring means, a pair of handles, each having one end mounted on said spring means for having the other end of each said handles urged away from each other by said spring means, and counter means, mounted on one of said handles and engageable by the other of said handles when each said handles are moved together, for indicating the number of times said handles are brought into contact with each other, said counter means comprising:

support rod means mounted in an axial direction in a hollow portion of one of said handles and supported at one end thereof by a solid portion of said one of said handles;

a unit dial axially mounted on said rod support means;

a tens dial axially mounted adjacent to said unit dial on said rod support means;

an indexing dial axially mounted between said unit dial and said tens dial on said rod support means and secured to said unit dial for turning as said unit dial is turned;

a reducing wheel rotatably mounted on a mounting portion of said indexing dial adjacent the periphery thereof for engagement with said tens dial for turning said tens dial by an increment of one for each complete rotation of said indexing dial;

a toothed ratchet wheel axially mounted on said rod support means on the side of said unit dial opposite to the side where said indexing dial is located and secured to said unit dial for turning said unit dial;

pawl means having pawls for engaging and turning said toothed ratchet wheel;

a pin attached to said pawl means and extending outwardly through an opening in said one of said handles for being contacted by the other of said handles when said handles are brought together for causing said pawl means to turn said toothed ratchet wheel when said pin is contacted by the other of said handles; and

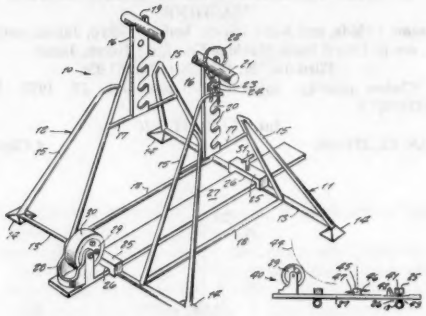
return hub means located outside the end wall of said one of said handles for holding the other end of said rod support means in position and for returning said unit dial and said tens dial to their starting positions.

4,262,899
ACCESSORY FOR EXERCISING ON A BICYCLE

Jorge G. Alvarez, Bolivar 451-3, Mexico 8 D. F., Mexico

Filed Oct. 6, 1978, Ser. No. 949,201
Int. Cl.[3] A63B *69/16*
U.S. Cl. 272—73 1 Claim

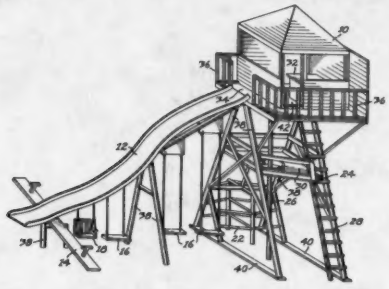
1. An accessory for exercising on a bicycle, comprising, forward and rearward, spaced-apart, generally U-shaped frame members, each said frame member having an elongated, tubular base member, each of said base members being provided with a foot at each of its ends for supporting said frame members upon a support surface, said base members also being provided with a pair of substantially vertical, upstanding tubular members, each upstanding tubular member being spaced apart and attached to opposite ends of said base member, said frame members being spaced apart in a generally parallel relationship and being attached to each other by a pair of perpendicularly extending, elongated, parallel spaced-apart tubular members, each of said parallel, spaced-apart tubular members having its ends attached to a base member of said forward and rearward frame members, forward and rearward U-shaped clamp members, each of said elongated, tubular base members having one of said clamp members attached thereon substantially equidistant the ends thereof, and equidistant from said parallel, spaced-apart tubular members, said clamp members having their free leg ends attached to said base members between the attached ends of said parallel, spaced apart tubular members, and extending upwardly therefrom, to form an opening between said base member and said clamp member, an elongated, substantially rectangular bar, said substantially rectangular bar being slidably received in said openings and locked therein by adjustable locking means, a pair of substantially rectangular shaped, horizontally spaced-apart plate members, each of said plate members being vertically attached to the upper end of an upstanding tubular member of said rearward frame member, each of said plate members being provided with a U-shaped notch on its upper end to receive an internally threaded, cylindrical fastener and at least one downwardly slanted notch in its forward edge for receiving said cylindrical fastener, the height of said cylindrical fastener being variable between said U-shaped notch and said slanted notch when used with said accessory, said cylindrical fasteners being adapted for attachment to the rear axle of a bicycle, the rear wheel of said bicycle being supported slightly above the upper surface of said rectangular bar for free rotational movement thereabove, a wheel, said wheel being stationarily fastened by fastening means to the end of said rectangular bar, adjacent said rearward, U-shaped clamp and extending substantially vertically upward therefrom, such that when the drive wheel axle of a bicycle is supported within said U-shaped notch or said slanted notch by said cylindrical fasteners, the drive wheel of a bicycle will frictionally engage the outer periheral surface of said wheel, said rectangular bar being forwardly and rearwardly adjustable to increase, or decrease, frictional engagement between said wheel of a bicycle supported on said accessory for increasing or decreasing the force required to turn said wheel by an exerciser, wherein the adjustable locking means comprises the forward clamp member having a tooth on an underside thereof selectively engaging between ratchet teeth upon an upper side of said rectangular bar, said bar being downwardly movable against a compression coil spring upon said tubular base member, so as to selectively disengage said teeth, and a block being mounted upon an upper side of said rectangular bar for being pushed by said exerciser's foot either forwardly or rearwardly.



4,262,900
PLAYGROUND SET

James D. Vinson, 3626 West End Ave., Nashville, Tenn. 37205

Filed Jul. 8, 1977, Ser. No. 813,827
Int. Cl.[3] A63B 9/00, 1/00, 17/00
U.S. Cl. 272—113 3 Claims

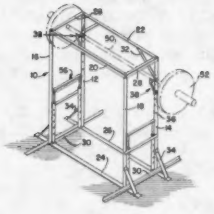


1. A playground set comprising joined as a unitary structure adapted to fit together within an area not greater than about 400 square feet, a treehouse which has a balcony and rails and as associated swingset which includes a plurality of swings placed at various heights above the ground, a seesaw and a slide, said swings being positioned below said slide.

4,262,901
SAFETY DEVICE FOR USE IN BAR BELL EXERCISES AND THE LIKE

Reginald O. Faust, 41 Oak Ct., Annapolis, Md. 21401

Filed Sep. 21, 1979, Ser. No. 77,532
Int. Cl.[3] A63B 21/06
U.S. Cl. 272—117 8 Claims

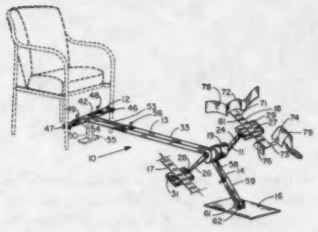


7. A device for use in exercising with a bar bell comprising a horizontal frame, vertically adjustable safety support means carried by said frame, said support means including horizontal bar means extending in a direction which is substantially normal to the vertical path of movement of a bar bell during exercising, said horizontal bar means having a length such that during exercising the bar means at all times intersects the normal path of movement of a bar bell, means for adjustably fixing said safety support means on said frame at a selected height wherein said bar means are sufficiently below the normal range of downward movement of a bar bell during a selected exercise as not to interfere with exercising but at a height to be readily engaged by a bar bell when the latter is lowered beyond the normal range of movement whereby in an emergency or at the conclusion of exercising the weight of a bar bell can be sustained by the safety support means at a height enabling an exerciser to escape beneath the bar bell wilthout danger of injury, said frame having a rear part and two side parts normal to the rear part, said safety means comprising telescopically arranged vertically extending sets of leg and socket members, one member of each set being rigidly fixed to each of said side parts of said frame, said horizontal bar means comprising a rigid horizontal bar rigidly fixed to the other member of each set which is telescopically moveable with respect to the one member rigidly fixed to a frame side part, fastening means for adjustably fixing the telescopically moveable member and its horizontal bar on the rigidly fixed member at a height corresponding to a selected type of bar bell exercise.

4,262,902
PORTABLE EXERCISE DEVICE

Marvin A. Dranselka, R.R. #1, Wayne, Nebr. 68787

Filed Jul. 6, 1979, Ser. No. 55,249
Int. Cl.[3] A63B 21/22
U.S. Cl. 272—132 6 Claims



1. A portable exercise device for attachment to a chair comprising:

a pedal assembly including a housing, a shaft rotatably disposed through said housing, and a pedal means attached to said shaft for rotating said shaft in response to the movement of a person's feet;

a horizontal connecting member rigidly attached to said housing;

a vertical supporting member rigidly attached to said housing and depending therefrom substantially perpendicularly with respect to said horizontal connecting member;

a pivotable base plate means attached to said vertical supporting member for varying the height of said device at its end distal a chair; and

transverse rear means for attaching said horizontal connecting member to two opposed legs of a chair that receives a user, wherein said attaching means includes:

a sleeve portion center section rigidly attached approximately at its mid-point to the end of the horizontal connecting member distal the housing;

insert means for telescoping within said sleeve portion center section;

end piece means attached to said insert means for receiving each of two opposing chair legs; and

holding means for adjusting the length of said transverse rear attaching means in order that it may be operably attached to two opposing legs of a chair at any desired width.

4,262,903
PADDLE RACQUET

Joseph Naret, 103 Marie Ave., Weirton, W. Va. 26062

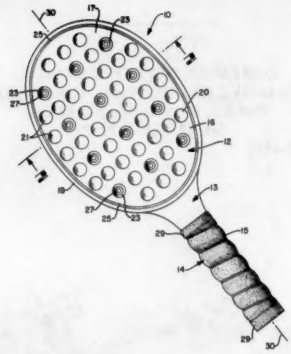
Filed May 18, 1979, Ser. No. 40,136
Int. Cl.[3] A63B 59/00
U.S. Cl. 273—67 R 9 Claims

8. A paddle racquet contact portion for contact with game balls or objects during racquet sports, comprising:

a substantially solid forehand surface having a multiplicity of textured indentations and a plurality of perforated indentations;

a backhand surface having a multiplicity of textured indentations and a plurality of perforated indentations;

each said perforated indentations on said forehand surface communicating with a conical perforation, each said conical perforation communicating with each said perforated indentation on said backhand surface, said forehand surface and said backhand surface differentiated by commu-



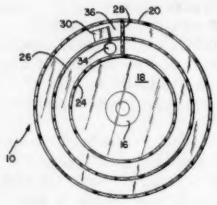
nication of the base of said conical perforation with said forehand surface and the communication of the apex of said conical perforation with the backhand surface effecting a differential air resistance between motion of said forehand surface and motion of said backhand surface.

4,262,904

CYLINDRICAL GAME DEVICE WITH CIRCUMFERENTIAL WALLS

David N. Magida, 232 W. Elm St., New Haven, Conn. 06515

Filed Feb. 22, 1980, Ser. No. 123,847
Int. Cl.[3] A63F 7/04
U.S. Cl. 273—113 5 Claims



1. A game device comprising: a cylinder formed of a pair of side walls and a first outer circumferential wall spanning the side walls; a second circumferential wall spanning the side walls and spaced inwardly of the first circumferential wall; a barrier extending between the first and second circumferential walls and spanning the side walls; an entry passage means providing communication between the space between said circumferential walls adjacent to a first side of the barrier and the exterior of the game device; at least one avoidance hole, having a diameter smaller than the width of the second circumferential wall, extending through the second circumferential wall and located spacedly from the second side of the barrier; and an exit passage means providing communication between the avoidance hole and the exterior of the game device.

4,262,905

PAPERBOARD TOY PROJECTOR

Russell J. Lyons, Franklin Park, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 28, 1979, Ser. No. 108,020
Int. Cl.[3] A63B 71/00
U.S. Cl. 273—129 W 5 Claims

1. A toy comprising a flat paperboard body member having front and rear faces, said body member having an outline shape and printed indicia on its front face of a person engaging in a sport involving a projectile,

a paperboard flat member representing the projectile of the said sport,

a slit in said body member of sufficient length to temporarily hold said flat member, said flat member being positioned in said slit with a portion of said flat member protruding from the rear face of said body member,

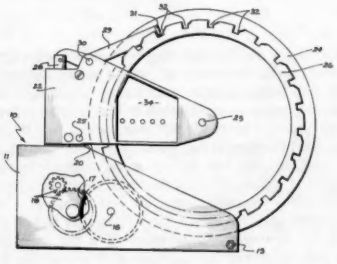
a paperboard flipper arm member having one portion secured to said body member, a swingable free end portion arranged to be flipped by the user to thereby strike the portion of the flat member protruding from said rear face, and a fold line joining said two flipper arm member portions to provide resiliency to the free end portion.

4,262,906

REEL SPINNING MEANS

Joseph R. Heywood, 218 Morgan St., Kingsgrove New South Wales,, Australia, assignor to Joseph Richard Heywood, Kingsgrove and Leonard Hastings Ainsworth, Rosebery, both of, Australia

Filed May 18, 1979, Ser. No. 40,308
Claims priority, application Australia, Oct. 12, 1978, PD6340
Int. Cl.[3] A63F 5/04
U.S. Cl. 273—143 R 2 Claims



1. Reel spinning means comprising a base, bearings in the base, a drive shaft supported in said bearings, electric motor means arranged to drive said drive shaft, a plurality of friction drive wheels arranged at intervals along the length of the shaft and driven thereby, a plurality of reel carrying brackets pivotably mounted on said base, a reel rotatably mounted on each said bracket, each reel having an annular surface in frictional driving contact with one of said friction drive wheels, the

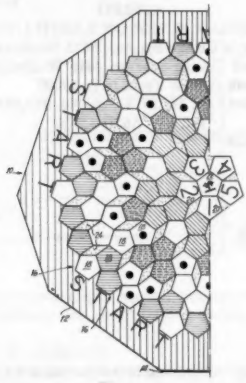
weight of each reel and its associated bracket acting to hold said annular surface in engagement with the friction drive wheel, a plurality of notches formed around the circumference of each reel or a part attached thereto, solenoid controlled detent means associated with each reel, said detent means being arranged to engage selectively in any one of said notches with its associated reel to cause the reel to stop, and means associated with each reel for sensing the position in which the reel has stopped.

4,262,907

GAME HAVING A GAME BOARD AND COMPONENTS TO BE USED THEREWITH

Allen Ginsberg, New York; Martin F. Huss, Brooklyn, both of N.Y., and Joseph Lynn, Burlington, N.J., assignors to Pentagames, Inc., New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 881,117
Int. Cl.³ A63F 3/00
U.S. Cl. 273—249 **4 Claims**



1. In a game, a game board having a central space of a given geometric configuration, an inner ring of spaces each of a given geometric configuration surrounding and contacting said central space, and a plurality of movement spaces, at least some of said spaces having barrier gaps provided therebetween, said spaces and gaps being arranged to define a plurality of elongated wavy non-linear paths made up of a series of contiguous spaces of a given geometric configuration, said paths extending outwardly from said inner ring of spaces toward an outer peripheral region of the game board, said wavy paths being situated beside each other while being distributed circumferentially around said inner ring of spaces and said wavy paths being contiguous with each other at predetermined locations so that the geometric spaces which form said paths define continuous paths extending between the outer peripheral region of the game board and said inner ring of spaces as well as continuous wavy, non-circular paths circumferentially surrounding said ring of inner spaces, said gaps being located so as to preclude the formation of radially or circularly extending paths, so that according to a given set of rules game pieces may be placed on the spaces of said wavy paths to progress therealong between the outer peripheral region of the game board and said central space thereof as well as circumferentially along the circumferential wavy paths defined by a series of contiguous portions of said wavy paths wherein at least some of said game board spaces have associated therewith different indicia means for defining a plurality of different groups of spaces, each of said groups of spaces having the same indicia means associated therewith which is different from the other indicia means and said spaces comprising a group of contiguous spaces extending circumferentially around said inner ring of spaces so as to define a plurality of mutually concentric circumferentially extending groups of contiguous spaces;

a plurality of groups of cards, each of said groups of cards having indicia means corresponding to the indicia means of a respective one of said groups of spaces, whereby according to predetermined rules when a player accumulates cards whose indicia corresponds to all of said groups, such player will have access to a space of said inner ring of spaces and wherein said cards have second indicia associated therewith which identify the same as belonging to different categories which respectively correspond to the spaces of said inner ring of spaces which have indicia associated therewith corresponding to said second indicia, whereby according to predetermined rules when a player accumulates predetermined cards belonging to the same category but different groups of said spaces such a player will have access to a space of said inner ring of spaces;

a plurality of personal markers, each having distinctive indicia means associated therewith corresponding to the respective game players, respectively provided for players of the game for movement along said paths and a plurality of identification markers having indicia means associated therewith which correspond to the player identifying indicia associated with said personal markers provided for each player to be situated in spaces onto which the personal marker of a given player is moved so that as the game progresses each player will take possession of some of said spaces with the possession being indicated by the identification markers of a given player; and

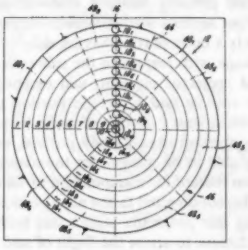
chance means for determining the movement of a personal marker of each player.

4,262,908

LIGHT RAY TARGET APPARATUS

Hermann Budmiger, Seewen, Switzerland, assignor to Laspo AG, Diessenhofen, Switzerland

Filed Oct. 18, 1979, Ser. No. 86,170
Int. Cl.³ F41J 5/02
U.S. Cl. 273—310 **30 Claims**



1. A target apparatus for simulated firing with a weapon which emits shooting pulses and for use with a target having target rings and target sectors, comprising:

a first detection device for detecting target rings which have been hit;

a second detection device for detecting target sectors which have been hit;

an evaluation device;

a hit-indicator device;

said first and second detection devices being mutually connected with one another by means of said evaluation device and with said hit-indicator device;

said first detection device comprising at least one revolving receiver containing receiving elements for the target rings;

said first detection device scanning the target for firing pulses in a revolving radial zone by means of said at least one revolving receiver; and

said second detection device being structured to detect the

position of the revolving receiver when struck by a firing pulse.

4,262,909
GAME APPARATUS

Joseph T. Becker, 2 S. 214 Sheffield, Glen Ellyn, Ill. 60137; Byron L. Doran, 1725 LaPalma Ct., Wheaton, Ill. 60187, and Patrick J. Perretti, 1634 Downing Ave., Westchester, Ill. 60153

Filed Aug. 24, 1977, Ser. No. 827,220
Int. Cl.[3] A63B *59/00, 65/00, 67/18*
U.S. Cl. 273—323 **5 Claims**

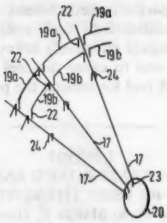
1. A toss and catch type game apparatus comprising, in combination, a projectile element and at least one projectile reception element, said projectile element comprising a body portion and a nose portion, said body portion being of hollow, frusto-conical configuration and defined by having a thin, imperforate outer sidewall, said sidewall having first and second circumferential margins defining, respectively, smaller and larger ends of said body, said nose portion of said projectile element being partially received within and closing off said smaller end of said body, said nose portion being made from a soft, at least partially resilient mass of material having a rounded front section, said reception element comprising essentially only a body portion having sidewalls of substantially identical shape with respect to the sidewalls of the body portion of said projectile element, said reception element being adapted to receive said projectile portion therein in nesting relation, with at least a portion of said nose extending through the smaller opening in said body portion, said reception element being able to be grasped by the exterior surface of the body portion thereof for manipulation by an operator with the large end thereof directed to the nose portion of the projectile for catching said projectile within said body portion of said reception element to arrest the flight of said projectile.

4,262,910
DARTBOARD

James H. Stone, Burgh-Le-Marsh, near Skegness, and Stephen H. Stone, Skegness, both of England, assignors to Dunlop Limited, London, England

Filed Apr. 16, 1979, Ser. No. 30,385
Claims priority, application United Kingdom, Apr. 25, 1978, 16211/78
Int. Cl.[3] F41J *3/00*
U.S. Cl. 273—408 **6 Claims**

1. A dartboard having a replaceable wire grid defining target areas, said grid comprising an inner ring and an outer ring which encloses said target areas, straight high tensile radial wires running between said inner ring and said outer ring, and arcuate high tensile wires having bent ends, said bent ends being pushed into the dartboard adjacent said radial wires to define the rings of said target areas within the sectors defined by said radial wires, each of said radial and arcuate high tensile

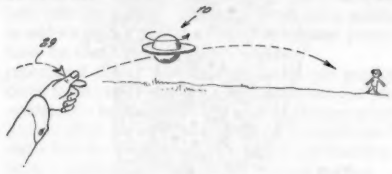


wires being separately removable from said dartboard and having a diameter in the range from 0.020 inch to 0.040 inch.

4,262,911
MARTIAN FLYER OR EARTH U.F.O.

John Opresik, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 18, 1978, Ser. No. 952,483
Int. Cl.[3] A63B *65/00*
U.S. Cl. 273—428 **1 Claim**

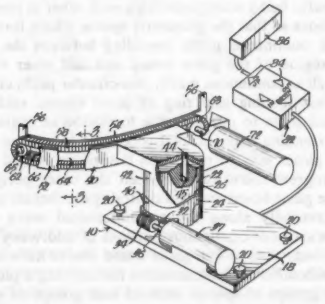


1. A flying toy, comprising in combination, a hollow spherical body and a wing surrounding said body, said wing and body being connected by means for providing additional thrust when the toy is propelled by flinging the toy while holding said wing, said body has upper and lower portions having spiral fins.

4,262,912
PHONOGRAPH TONE ARM CONTROL DEVICE

Gary T. Nakai, 5515 Cromwell La., Oak Forrest, Ill. 60452

Filed Oct. 29, 1979, Ser. No. 89,275
Int. Cl.[3] G11B *17/06*
U.S. Cl. 369—41 **8 Claims**



1. A device for positioning the tone arm of a phonograph, the tone arm being pivotal in both vertical and horizontal

direction, said device comprising: an endless belt for supporting and transporting said tone arm; a belt guide to hold said belt on an arcuate path, the center of arc being coincident with the pivotal center of the tone arm; first motor means for driving said endless belt; cam means adapted for raising and lowering said endless belt; second motor means for actuating said cam means; and control means for selectively driving said motor means in either direction independently of each other.

4,262,913

HIGH PRESSURE GLAND FOR OPTICAL FIBRES AND/OR ELECTRICAL CONDUCTORS

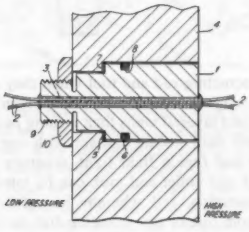
Colin S. Parfree, Harlow; Duncan A. Gunn, Saffron Walden, and John C. Crownshaw, Bishop's Stortford, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 31, 1979, Ser. No. 71,469

Claims priority, application United Kingdom, Sep. 7, 1978, 35915/78

Int. Cl.³ H02G *15/04;* F16J *15/12*

U.S. Cl. 277—1 **9 Claims**



1. A high pressure gland inserted through an aperture of a submarine bulkhead for a telecommunication cable comprising:

a plurality of conductors,

an inner tubular strength member enclosing said conductors and extending through said gland,

an encapsulating plastic material in said inner tubular member which adheres to both the wall of the bore and the conductors,

a sheathing surrounding said inner tubular member,

a second tubular member secured to the outside of said sheathing by means of an injection moulded plastic material, said injection moulded plastic material forming a tapered joint around said second tubular member, said second tubular member having at least one annular groove, a radial flange and a first shoulder section, O-ring seals disposed in said annular grooves, said submarine bulkhead comprising a second shoulder section,

a compressible seal disposed between said first shoulder and said second shoulder sections, and

a gland retaining ring having clamping bolts for securing said gland to said bulkhead and applying pressure to said compressible seal.

4,262,914

END FACE SEAL ASSEMBLY

Robert D. Roley, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

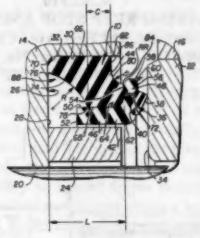
PCT No. PCT/US79/01036, § 371 Date Dec. 3, 1979, §102(e) Date Dec. 3, 1979.

This PCT application filed Dec. 3, 1979, Ser. No. 140,382

Int. Cl.³ F16J *15/32, 15/34*

U.S. Cl. 277—84 **5 Claims**

1. In an end face seal assembly (10) having a resilient load ring (44) and a seal and support ring means (36,42) concentrically disposed about a central axis (18), the load ring (44) being positionable between a first seat (26) provided within a first member (14) and a second seat (64) defined about the seal and support means (36,42) for axially urging the seal and support ring means (36,42) into sealing engagement against an end face (34) of a second member (22), said resilient load ring (44) being defined by a plurality of preselected surfaces including a cylindrical outer peripheral surface (66) and a first end face (70) extending radially inwardly therefrom for joint engagement with said first seat (26), a cylindrical inner peripheral surface (68) and a second end face (72) extending radially outwardly therefrom for joint engagement with said second seat (64), an interior surface (74) connected between the first end face (70)



and the inner surface (68), and an exterior surface (80) connected between the outer surface (66) and the second end face (72), the improvement comprising:

said exterior surface (80) having a shallow arcuate recess in cross-section defined by a radially extending outer portion (86) connected to said outer surface (66) and a revolved radius (RR) extending from said outer portion (86) to said second end face (72), said radially extending outer portion (86) being normal to said central axis (18).

4,262,915

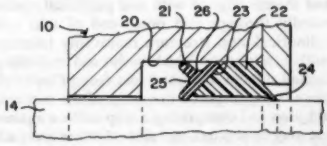
LOW FRICTION DRAG SEALS

Arthur J. Williams, Youngstown, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Continuation of Ser. No. 897,176, Apr. 17, 1978, abandoned. This application Oct. 30, 1979, Ser. No. 89,452

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—188 R **7 Claims**



1. In a fluid apparatus having a housing and a linearly moving cylindrical member movable in a bore in said housing, the improvement comprising an annular chamber surrounding the cylindrical member in one of the housing and cylindrical member, and defined by two spaced annular end walls and a bottom surface, a generally rigid back-up ring in said annular chamber having a generally elongate quadrilateral shape with one side bearing against the bottom surface of the annular chamber and an adjacent second side bearing against an end wall of said annular chamber, an inclined surface on the third side opposite said second side extending angularly from the relatively movable surface to the said one side in the direction of said second side, a fourth side generally parallel to said first side adjacent the relatively movable surface, an elastomer ring having three spaced edges in said annular chamber, said elastomer ring having a generally triangular cross section such that straight lines drawn betwee.. said three spaced edges define at least one generally 45° angle, a generally V-notch in at least one side of said elastomer ring opposite said 45° angle open to said annular chamber, a second side adjacent said V-notch bearing at least

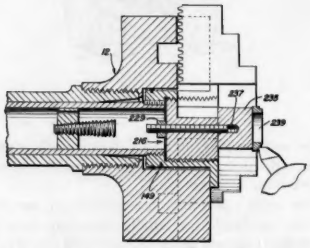
in part against the bottom wall of said annular chamber and a third side of said elastomer ring bearing at least in part against the inclined surface of said back-up ring whereby the edge of said elastomer ring member between said one side and said third side is in sealing contact with said relatively movable surface and a depending edge on said back-up member between the second and fourth sides of said back-up ring depends below said fourth side in contact with said relatively movable surface.

4,262,916

CHUCK HAVING KEEP STOP AND ACCESSORIES

Leonard M. Tykwinski, 910 First Ave., Cadillac, Mich. 49601

Filed Dec. 12, 1978, Ser. No. 968,635
Int. Cl.³ B23B *31/02*
U.S. Cl. 279—1 S **7 Claims**



1. A rotary hollow lathe spindle having a chuck supported on one end for rotation therewith, said chuck defining an elongated central cavity therein concentric with the axis of rotation of said spindle and opening endwise outwardly of said one spindle end, said chuck including three radially shiftable jaw members shiftable in radial paths spaced outwardly of the inner end of said cavity, a keep tube supported within and projecting outwardly of said one spindle end and terminating outwardly inwardly of said radial paths, a keeper including a hollow cylindrical body having inner and outer ends, the inner end of said hollow body being removably telescoped over and supported from the outwardly projecting end of said keep tube inwardly of said paths, said hollow body including three radial slots formed therein aligned with said paths and opening endwise outwardly through said outer end of said cylindrical body, a cylindrical stop structure removably telescoped and secured within said cylindrical body and including radial notches formed therein, the outer end face of said cylindrical stop structure being disposed inwardly of the outermost portions of said jaws and comprising a stop surface against which a workpiece may be abutted, said slots, notches and paths being registered for receiving said jaws through said slots and in said notches to engage a short workpiece abuttingly supported from said stop surface.

4,262,917

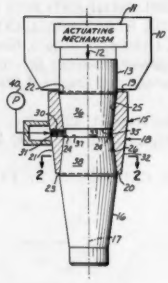
TOOL HOLDER FOR IMPACT TOOL

Jack B. Ottestad, 1442 Muirlands Dr., La Jolla, Calif. 92037

Filed Oct. 11, 1978, Ser. No. 950,401
Int. Cl.³ B23B *31/30*
U.S. Cl. 279—4 **6 Claims**

1. A compressive coupler to hold a tool to the end of an axially reciprocable, percussive actuating rod, said rod having a peripherally continuous external tapered wall narrowing towards its end where the tool is to be mounted, the tool having a peripherally continuous external tapered wall with a taper angle narrowing toward its end which faces the actuating rod, said tapers having a common central axis which is coincident with the direction of axial forces to be exerted by the actuating rod, said compressive coupler comprising:

a collet having an axis, a first and a second end, an outer wall, a first opening at said first end to receive the said actuating rod, a second opening at said second end to receive said tool, each of said openings being bounded by a respective peripherally continuous internal tapered wall centered on said axis, and having a respective taper angle, which respectively substantially match the taper angles on the actuating rod and tool, said taper angles being within the cone of friction, and fluid inlet means passing through said collet and entering into the region between the ends



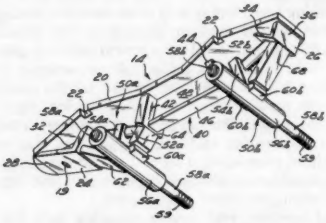
of said actuating rod and tool when they are pressed into said openings in order to admit fluid under pressure to said region, said tapered walls then making peripheral surface-to-surface fluid sealing contact with one another which renders said region fluid tight, whereby said collet and rod, and said collet and tool, can be joined only by frictional retention, and whereby in order to separate the collet from one of the actuating rod or tool, fluid under pressure can be injected into said region.

4,262,918

UNITARY MOLDED SKATE CHASSIS

Hector M. Sandino, 24451 Peacock St., El Toro, Calif.

Filed Aug. 10, 1979, Ser. No. 65,738
Int. Cl.³ A63C *17/02*
U.S. Cl. 280—11.26 **17 Claims**



15. A unitary, plastic molded skate chassis, comprising:

a support plate; and

dual skate trucks integral with said plate, each said truck having a torsional member and means for mounting said torsional member beneath said plate such that the ends of said torsional member are non-rotatable and a portion intermediate said ends is permitted to rotate about its axis in response to the tilting of said plate to provide substantially the only means for turning said chassis.

17. A unitary, plastic-molded skate chassis comprising:

a support plate;

means for receiving a roller skate axle; and

a torsional member supported at its ends beneath said plate for rotation about an axis inclined with respect to the horizontal to provide substantially the sole means for turning said truck;

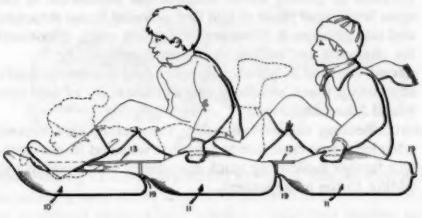
said torsional member being sufficiently flexible to permit it to bend at a location between said ends to provide means for absorbing shocks and forces exerted on said truck through roller skate wheels attached to said axle.

4,262,919

ARTICULATED BODY-STEERABLE SLED WITH ADD-ON MODULES

Edward D. Krent, 207 W. Eisenhower Dr., Sharon, Mass. 02067

Filed Jun. 4, 1979, Ser. No. 44,961
Int. Cl.³ B62B *13/08*
U.S. Cl. 280—16 **20 Claims**



1. A sled for sliding over snow and ice which is body-steerable in both seated and prone positions comprising:

a rigid front sled body unit including one or more running surfaces for sliding over snow and ice and, all within the vertical confines of said front unit, a pair of recessed portions contoured for receiving the arms of a user in the prone position, a pair of projecting portions contoured for providing grips for the hands of a user in the prone position, and a pair of recessed portions contoured for receiving the feet of a user in the seated position;

a rigid rear sled body unit including one or more running surfaces and, all within the vertical confines of said rear unit, a pair of recessed portions contoured for receiving the legs of user in the prone position, a pair of portions contoured for providing grips for the hands of a user in the seated position and a portion contoured for receiving the hips of a user in the seated position;

hinge means for flexibly coupling said front sled body unit to said rear sled body unit in such a manner that said front unit can be turned laterally in relation to said rear unit; and

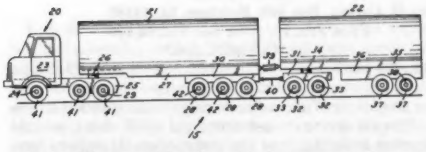
plate means substantially covering the region between said front unit and said rear unit to protect a user of said sled against pinching.

4,262,920

STEERING STABILIZER

Bert J. Mettetal, Tecumseh, Mich., assignor to Truck Safety Systems, Inc., Tecumseh, Mich.

Filed Aug. 9, 1978, Ser. No. 932,147
Int. Cl.³ B62D *53/06*
U.S. Cl. 280—408 **10 Claims**



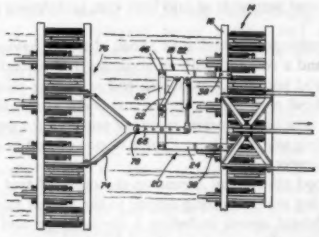
1. A trailer assembly adapted to be transported by a tractor comprising a lead trailer having front and rear frame portions, said front frame portion of said lead trailer being adapted to be pivotally connected to the tractor, a rear trailer having front and rear frame portions, a steerable towing vehicle located under the front frame portion of said rear trailer, said rear trailer being pivotally connected to said steerable towing vehicle, a first trailer connection means pivotally connected at one end to said rear frame portion of said lead trailer and pivotally connected at its other end to said steerable towing vehicle, and a second trailer connection means pivotally connected at one end to said rear frame portion of said lead trailer and pivotally connected at its other end to said front frame portion of said rear trailer, said first trailer connection means comprises a drawbar having its forward end pivotally connected to the rear frame portion of said lead trailer for pivotal movement about both a vertical axis and a horizontal axis, said drawbar having its rearward end pivotally mounted to said steerable towing vehicle for pivotal movement about a transverse horizontal axis, said second trailer connection means comprises two stabilizing members, coupling means pivotally connecting said stabilizing members to one another, a first of said stabilizing members being mounted in a housing pivotally connected to the rear frame portion of said lead trailer for pivotal movement about a horizontal axis, and a second of said stabilizing members being supported by said front frame portion of said rear trailer for limited rotative movement about a longitudinal axis whereby said second trailer connection means provides stability from said lead trailer to said rear trailer.

4,262,921

TANDEM IMPLEMENT HITCH

Thomas L. Dwyer, Alexander, N. Dak. 58831

Filed Mar. 21, 1979, Ser. No. 23,030
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—411 C **3 Claims**



1. An implement hitch for tandem earthworking implements, said hitch including a generally horizontal forwardly opening U-shaped frame defining a pair of elongated opposite side members and a rear cross member extending and secured between rear ends of said side members, the forward ends of said side members including anchor means for anchoring to transversely spaced rear portions of a forward implement, an elongated front-to-rear extending draw bar, said draw bar and cross member including coacting pivot means for pivotally anchoring said draw bar to said cross member for oscillation relative thereto about an upright axis disposed intermediate the opposite ends of said cross member and the front and rear ends of said draw bar with the front and rear ends of said draw bar projecting forwardly and rearwardly, respectively, of said cross member, the rear end of said draw bar including means for pivotally attaching a rear implement thereto, and motor means operatively connected between the front end of said draw bar and said frame for adjustably laterally shifting said front end and thus variably canting said draw bar relative to a front-to-rear direction, said pivot means including means operative to adjustably shift said axis along said draw bar, said draw bar including longitudinally spaced vertical bores therethrough, said pivot means comprising a pivot fastener secured through a selected one of said bores and said cross member, said draw bar bores and pivot fastener comprising said means operative to adjustably shift said axis, inclined brace means secured between one side of said members at a point forward of

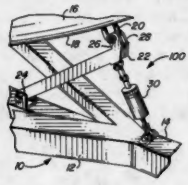
said cross bar and said cross bar intermediate the opposite ends of the latter, said motor means comprising an elongated extendible motor having one end pivotally anchored relative to one of said side members and the other end pivotally anchored to the forward end of said draw bar.

4,262,922

BOAT TRAILER STABILIZING DEVICE

Robert D. Nelson, Nelson Marine Products, 1653 Industrial Blvd., Lake Havasu City, Ariz. 86403

Continuation of Ser. No. 892,394, Mar. 31, 1978, abandoned.
This application Dec. 3, 1979, Ser. No. 99,604
Int. Cl.³ B60P 3/10
U.S. Cl. 280—414 R **1 Claim**



1. A stabilizing device for a boat trailer having a frame for supporting a boat of the type having a hull with a bow eye secured to the forward underside portion of the hull and a floater bar having one end pivotally secured to the trailer and the other end securable at said bow eye, said device comprising:

(a) a double acting hydraulic shock absorber having a head end and a rod end with an actuating rod extending from said rod end and a mounting rod extending axially from said head end, said mounting rod being axially threaded;

(b) first attachment means on one of said rods for detachably securing said stabilizing device to one of said bow eye or said floater bar;

(c) second attachment means on the other of said rods for securing said stabilizing device to the trailer, said second attachment means including a clevis flange and a clevis eye internally threaded and cooperative with said mounting threaded rod and axially moveable along said mounting rod by rotating said clevis eye relative thereto, thereby effectively adjusting the overall length of said stabilizing device and permitting said device to be pivoted to a substantially horizontal out-of-the-way position when said first attachment means is detached; and

(d) locking nut means in threaded engagement with said mounting rod and adjustable therealong and engageable with said clevis eye to lock said clevis eye at a preselected position whereby said stabilizing device is securable between the said boat and trailer to hydraulically dampen nose bounce in both pivotal directions of said floater bar and to stabilize the boat when the trailer is in tow.

4,262,923

MULTI-PURPOSE OVER-THE-HIGHWAY TRAILER ARRANGEMENTS

Gary L. Weir, Denton, Tex., assignor to Pullman Incorporated, Chicago, Ill.

Filed Nov. 16, 1978, Ser. No. 961,326
Int. Cl.³ B62D 21/00
U.S. Cl. 280—423 B **11 Claims**

1. A low bed transporter vehicle arrangement adapted to be connected to a fifth wheel structure of an over-the-highway tractor comprising:

a gooseneck structure having a horizontal beam structure and a vertical beam structure,

king pin means on said horizontal beam structure and adapted to be connected to said fifth wheel structure,

a first wheeled longitudinally extending and horizontally supporting frame structure spaced rearwardly of said gooseneck structure and having a forward portion,

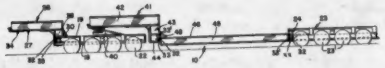
coupling means releasably connecting said first wheeled frame structure to said gooseneck structure,

said coupling means including a first connecting portion on said gooseneck vertical beam and a second connecting portion on said forward portion of said first wheeled frame structure,

said first and second connecting portions presenting abutting overlapping surface portions,

lock means releasably coupling said overlapping surface portions to permit direct longitudinal separation in the same horizontal plane of said first wheeled frame structure and said gooseneck structure facilitating quick disconnect for changing and adding to the arrangement,

a second wheeled longitudinally extending and horizontally supporting frame structure space rearwardly of said first wheel frame structure,

interconnecting means releasably connecting said second wheeled frame structure to said first wheeled frame structure further facilitating quick disconnect for changing and adding to the arrangement,

said interconnecting means including a second fifth wheel mounted on said first wheeled frame structure, and a load transport means connected with and extending between second fifth wheel of said first wheeled frame structure and said second wheeled frame structure,

said second fifth wheel having a pivotal connection about a vertical axis with said load transport means,

said interconnecting means further comprising a second gooseneck structure having a second horizontal beam structure and a second vertical beam structure,

a second king pin means on said second horizontal beam structure engageable with said second fifth wheel,

said second wheeled frame structure including a forward portion,

said load transport means including a trailer platform having forward and rear portions,

second coupling means releasably connecting said second vertical beam structure of said gooseneck structure to said forward portion of said trailer platform and third coupling means releasably connecting said rear portion of said trailer platform to said forward portion of said second wheeled frame structure, and,

said second coupling and said third coupling means each including means for vertically adjusting the height of said platform relative to, said wheeled frames.

4,262,924

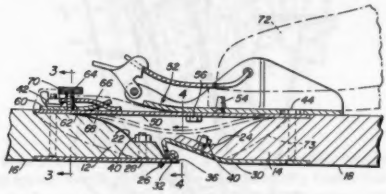
HINGE SKI

Charles H. Corwin, Box 689, Ketchum, Id. 83340

Filed Feb. 14, 1979, Ser. No. 12,224
Int. Cl.³ A63C 5/02
U.S. Cl. 280—603 **13 Claims**

1. A ski construction that automatically adjusts to varying surface conditions of ice and snow to prevent rearward movement of the ski during cross-country and uphill skiing, said ski construction including front and rear randem ski sections having substantially coextensive longitudinal undersurfaces, pivot means pivotally joining said sections together at their adjacent ends for relative angular displacement about a single, fixed transverse axis closely adjacent the rear extremity of the undersurface of the rear end of said front section and between predetermined first positions with said undersurfaces substan-

tially coplanar and variable second positions with the adjacent portions of said longitudinal undersurfaces defining an included angle greater than 180°, said ski construction including spring means operatively connected between said sections yieldingly biasing said sections from said variable second positions toward said predetermined first positions, the rear extremity of said undersurface of said front section defining rearwardly facing edge means for engagement with ice and hard packed snow, the forward end of said rear ski section including a forwardly and upwardly inclined under-surface forward terminal end immediately rearward of said axis, ski



boot binding structure supported from said rear ski section and including a toe portion thereof for support of the toe portion of an associated ski boot, said portion of said boot binding structure being disposed in vertically spaced relation over said inclined undersurface forward terminal end, whereby downward toe pressure upon rearward thrusting of the leg of a skier will result in said undersurfaces defining an included angle greater than 180° and said rearwardly facing edge means will be inclined rearwardly and downwardly relative to the direction of possible rearward sliding of said rear ski section on a supportive snow surface.

4,262,925

SKI WITH NON-SYMMETRICAL RUNNING SURFACE

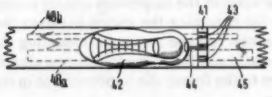
Hans-Joachim Plenk, Ruhpolding, Fed. Rep. of Germany, assignor to Jochen Plenk KG, Fed. Rep. of Germany

Division of Ser. No. 753,696, Dec. 23, 1976, Pat. No. 4,147,377. This application Dec. 1, 1978, Ser. No. 965,274

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1975, 2558939

Int. Cl.[3] **A63C** *5/04*

U.S. Cl. 280—604 **5 Claims**



1. A ski comprising an elongate body having an upper surface and a running surface, a longitudinal guide groove dividing said running surface into an inner longitudinal zone and an outer longitudinal zone which are fixed relative to one another, said zones making different acute angles with respect to the transverse axis of the ski, and at least one hide strip affixed to said running surface in one of said zones, said at least one hide strip having no counterpart in the other of said zones, whereby said running surface is unsymmetrical with respect to the longitudinal axis of the ski so that a skier wearing the ski can shift his weight laterally from one zone to another and thereby change the sliding characteristics of the ski.

4,262,926

SKI BRAKE

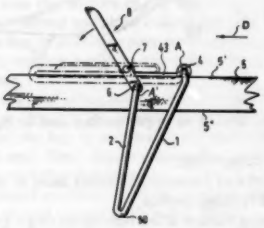
Tilo Riedel, Eching, Fed. Rep. of Germany, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France

Division of Ser. No. 815,364, Jul. 13, 1977, abandoned. This application Aug. 27, 1979, Ser. No. 70,115

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1976, 2632849

Int. Cl.[3] **A63C** *7/10*

U.S. Cl. 280—605 **10 Claims**



1. A ski brake for use on a ski having a snow-engaging lower surface and a boot-carrying upper surface and normally adapted to travel forwardly in a predetermined travel direction, said ski brake comprising:

a pivot on said ski defining an immovable pivot axis fixed relative to said ski and extending generally parallel to said surfaces and transverse to said direction;

a guide pivotal on said ski about an immovable guide axis generally parallel to said pivot axis, said guide forming a movable pivot axis offset from said guide axis and generally parallel thereto and displaceable on pivoting of said quide at least partially in said direction between an unactuated position relatively far from said immovable pivot axis and an actuated position relatively close to said pivot immovable axis;

a brake element having a guided leg having one end pivoted in said guide at said movable pivot axis and a pivot leg having one end pivoted in said pivot about said immovable pivot axis, said legs having opposite joined-together other ends, said brake element being displaceable between a braking position with said movable axis in said unactuated position and said legs extending transverse to said direction and downwardly below said lower surface and a rest position with said legs extending generally parallel to said direction lying above said surfaces, and said movable axis in said actuated position;

means including an actuator operatively connected to one of said legs and displaceable between an advanced position relatively far from said upper surface and a depressed position relatively close to said upper surface and spaced from said advanced position for displacing said element from said braking into said rest position on displacement of said actuator from said advanced into said depressed position with concomitant pivoting of said guide about said guide axis; and

spring means connected to said element for urging same into said braking position, for urging said actuator into said advanced position, and for urging said movable pivot axis into said unactuated position.

4,262,927

STREAMLINED TIP FOR A SKI

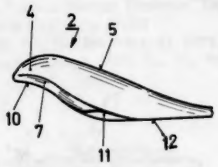
Peter Hochstrasser, Alpenblickstr. 11, 8630 Rüti/ZH, Switzerland

Filed May 2, 1979, Ser. No. 35,246

Claims priority, application Switzerland, May 5, 1978, 48761/78

Int. Cl.[3] **A63C** *5/00*

U.S. Cl. 280—609 **16 Claims**



1. In a ski having an upper surface and an opposed running surface;

a ski tip comprising:

an upward and forwardly directed bend at the forward end of said running surface;

said running surface at the bent tip having a generally triangular section which narrows toward the front;

two outwardly facing side covering surfaces, both extending in a direction upwardly from said running surface portion of the ski and also extending forwardly of said triangular surface; said side covering surfaces meeting at a ridge that extends generally along the longitudinal central plane of said ski tip and said ridge extending forwardly and being generally inclined upwardly further from said triangular surface;

said ridge having a downward curvature with respect to the main axis of the ski tip at the front extremity of said tip;

an upper surface connected to both said side surfaces and extending over the top of said ski tip and merging into the upper surface of the ski, for defining a closed ski tip which includes said side covering surfaces and said upper surface.

4,262,928

GOLF CLUB CARRIER

Ammon M. Leitzel, Portland, Oreg., assignor to Jarman Company, Milwaukie, Oreg.

Continuation of Ser. No. 844,066, Oct. 20, 1977, abandoned, which is a division of Ser. No. 760,912, Jan. 21, 1977, Pat. No. 4,136,724. This application Jun. 25, 1979, Ser. No. 51,694

Int. Cl.[3] **B62B** *1/06*

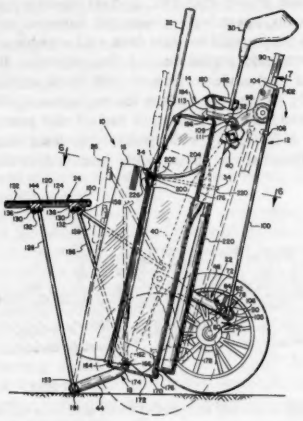
U.S. Cl. 280—645 **9 Claims**

1. In a golf club carrier,

a golf cart frame having base means and upright means, a seat,

first leg means pivotally attached to the seat and pivotally attached to the base means,

and second leg means comprising a rod pivotally attached to the seat at one end and pivotal on the upright means at its other end, and a brace slidable on the rod at one end of the brace and pivotal on the upright means at the other end of the brace,



the leg means serving to mount the seat selectively in a sitting overcenter position and a folded overcenter position.

4,262,929

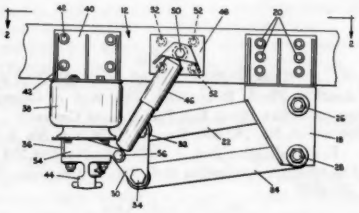
SUSPENSION WITH RESILIENT REACTION BAR

William C. Pierce, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 22, 1978, Ser. No. 973,236

Int. Cl.[3] **B60G** *9/02*

U.S. Cl. 280—713 **9 Claims**



1. In a vehicle suspension system for connecting an axle to a frame of the vehicle, the suspension system comprising a spring and means for mounting the spring between the axle and the frame, a reaction rod and means for mounting the reaction rod between the axle and the frame to dampen vibration of the axle with respect to the frame, the improvement in the reaction rod comprising:

an annular end portion;

an articulating pin positioned concentrically within the annular end portion; and

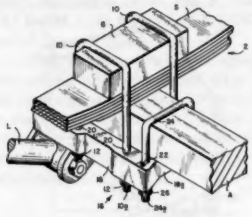
a substantially uncompressed annular resilient elastomeric spring of disc-like configuration suspending the articulating pin in the annular end portion, the spring having an axially reduced thickness configuration and properties to allow multidirectional rotation and conical articulation of the articulating pin with respect to a central axis of the annular end portion to dampen low amplitude, high frequency vibration in the suspension system; and

said means for mounting the reaction rod between the axle and the frame including means for rigidly mounting the articulating pin to the axle or to the frame.

4,262,930
TRUCK TRAILER SUSPENSION

Jonathan Milne, Oak Hill Rd., Barrington, N.H. 03825

Filed Sep. 14, 1979, Ser. No. 75,808
Int. Cl.[3] B60G *11/04*
U.S. Cl. 280—718 3 Claims

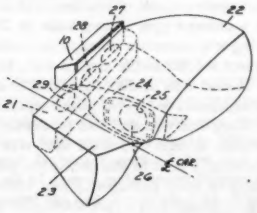


1. In a trailer suspension of the type including an elongated leaf spring having its opposite ends pivotally connected to the trailer frame, a wheel axle disposed generally perpendicular to the spring, means for connecting the axle to the spring near the midpoint thereof in the form of a saddle clamp assembly including a pair of U-bolts engaged around the spring and axle, a saddle block formed with openings for receiving the threaded ends of the U-bolts and nuts turned down onto the U-bolt ends so as to clamp the spring, axle and block together, and a torque arm pivotally connected between the saddle block and the frame, the improvement wherein the axle is clamped to the underside of the spring, and the saddle block has an extension extending an appreciable distance along the length of the axle, means defining openings through the saddle block extension, said openings being positioned fore and aft of the axle, a third U-bolt having threaded ends engaged around the axle, the ends of the third U-bolt extending through the passages formed in the block extension, and a pair of nuts turned down onto the third U-bolt ends so as to clamp the axle to the top of the saddle block whereby a direct connection is established between the axle and the frame by way of the saddle block and torque arm which connection is independent of the spring.

4,262,931
AIR BAG RESTRAINT SYSTEM

Robert A. Strasser, Livonia, and Richard B. Case, Monroe, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 18, 1979, Ser. No. 76,710
Int. Cl.[3] B60R *21/02*
U.S. Cl. 280—729 5 Claims



1. An air bag restraint system for restraining movement of passengers seated in front seating positions, except the seating position behind the steering wheel, of a motor vehicle,

the restraint system including:

a flexible bag confined within the vehicle in a normally deflated condition,

the bag being spaced forwardly of the passenger seating positions,

a pressurizing means contained within the vehicle in communication with the flexible bag,

the pressurizing means being actuatable to force pressurized gas into the bag to urge the latter from deflated to inflated condition for passenger restraint purposes,

the bag having a plurality of compartments therein and being constructed and arranged so that during inflation it deploys toward the passenger seating position farthest away from the excepted seating position and also expands laterally across the interior of the vehicle in front of the seating position between the seating position farthest from the excepted position and the latter,

when inflated, the plurality of compartments in the air bag forming a first cushioning means extending the full lateral length across the bottom of the bag to provide knee restraint and second and third cushioning means across the top of the bag to provide upper torso restraints for passengers in the seating positions other than the excepted seating position,

the air bag material being permeable to permit flow of pressurized gas through the compartment walls to the atmosphere and the bag to collapse at a controlled rate,

the second and third impact cushioning means having a common wall therebetween,

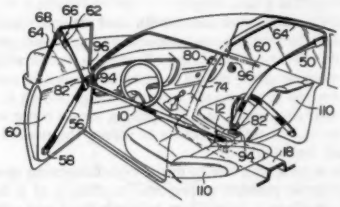
the third impact cushioning means being of smaller volume than the second impact cushioning means,

and the common wall having a one-way flap valve therein operable to equalize pressure between the second and third impact cushioning means when pressure in the second impact cushioning means exceeds that in the third impact cushioning means during collapse of the bag.

4,262,932
SEATBELT SYSTEM

Masanao Motonami; Jun Yasumatsu, both of Toyota, and Tatsushi Kubota, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 8, 1979, Ser. No. 64,740
Claims priority, application Japan, Dec. 4, 1978, 53-168362[U]
Int. Cl.[3] B60R *21/10*
U.S. Cl. 280—802 9 Claims



8. A seatbelt system for positively restraining an occupant by locking actions of a lock mechanism in an emergency of a vehicle, comprising:

an outer webbing, opposite ends of which are secured to the upper and lower portions of a door respectively;

a retractor secured to a substantially central portion of the vehicle;

an inner webbing coupled at one end to said retractor wound up by biasing force of said retractor;

an acceleration sensor for locking a wind-off of said inner webbing in an emergency of the vehicle provided in said retractor;

a first lock mechanism for directly locking an intermediate portion of said inner webbing when tension of said inner webbing exceeds a predetermined amount; and

a ring joint secured to the other end of said inner webbing and guiding an outer webbing in a manner that said inner webbing can be moved in the longitudinal direction

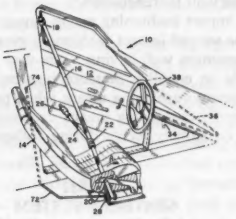
thereof, said ring joint being provided therein with a first opening, a locking bar secured to one side of said ring joint by rivets and dividing said first opening into second and third openings; the outer webbing is inserted into said second opening from the other side thereof, an intermediate portion of said outer webbing is wound around said locking bar and turned back again and passes through said third opening and extends to the other side, whereby a second lock mechanism is provided wherein said rivets can be broken by tension of the outer webbing in an emergency of the vehicle, thus enabling the locking bar to clamp the outer webbing between itself and said first opening to lock same.

4,262,933

PASSIVE SEAT BELT SYSTEM WITH DAMPENING MEANS

William R. Fox, Warren, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 29, 1979, Ser. No. 89,653
Int. Cl.³ B60R *21/02*
U.S. Cl. 280—802 **10 Claims**



1. A vehicle passive seat belt system comprising:

seat belt webbing adapted to be automatically positioned about a vehicle occupant;

seat belt retractor means connected to said webbing;

rewind means associated with said retractor means and exerting a rewind force on said webbing whereby said webbing is normally taken up by said retractor at a rewind speed within a first range;

dampening means associated with said rewind means and movable between an operable and an inoperable position, said dampening means being effective in its operable position to cause said webbing to be taken up by said retractor at a rewind speed within a second range which is lower than said first range, said dampening means being ineffective in its inoperable position to reduce the rewind speed of said webbing; and

actuator means effective to move said dampening means to its operable position in response to closing of a door of said vehicle or to a condition indicating that said vehicle is operable for locomotion.

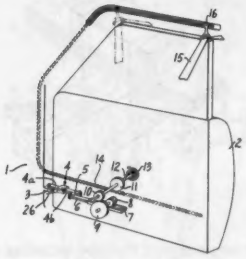
4,262,934

INPUT MOTION COUPLING TO A MOTION AMPLIFIER FOR USE IN PASSIVE SEAT BELT RESTRAINT SYSTEMS

Juichiro Takada, 3-12-1 Shinmachi Setagayoku, Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,341
Claims priority, application Japan, Jul. 31, 1978, 53-092586
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **3 Claims**

1. In a passive occupant restraint belt system for vehicles which includes a restraining belt, belt transfer means engaging the belt for moving the belt between the restraining and the releasing positions and motion transmission means coupled to the belt transfer means for transmitting and amplifying opening motions of the door to the transfer means, the transmission means including a motion amplifier mounted on either the vehicle body or door and a linkage having one end attached to the other of the body and door and the other end coupled to an input component of the motion amplifier, wherein opening and closing movement of the door is transmitted through said linkage to said motion amplifier, the improvement comprising means for interrupting motion transmission through the link-



age wherein the linkage comprises two links pivotally connected at a common joint, and detector means coupled to the vehicle seat to be responsive to the weight on the seat for actuating the interrupting means comprising means for selectively locking the joint when a passenger is sitting in the seat and unlocking the joint when the seat is empty.

4,262,935

DONOR MATERIAL FOR CARBONLESS COPYING AND COATING COMPOSITION FOR THE SAME

John V. Andersen, Vaerlose, Denmark, and Guido Dessauer, Duesseldorf-Gerresheim, Fed. Rep. of Germany, assignors to Feldmuhle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany and Aktieselskabet For Kontor Kemi, Glostrup, Denmark

Filed Oct. 18, 1978, Ser. No. 952,269
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747899; Denmark, Jan. 18, 1978, 249/78
Int. Cl.³ B41L *1/20*
U.S. Cl. 282—27.5 **15 Claims**

1. A donor sheet for carbonless copying consisting essentially of a substrate of sheet material and of a solid coating on one face of said substrate, said coating consisting essentially of at least one dye precursor capable of reacting with an electron acceptor to form a colored dye, a wax, solid at 20° C. and capable of dissolving said precursor when in the molten condition, and an activator soluble in the molten wax, but at most sparingly soluble in said wax at 20° C., said activator being present in said composition in a first phase separate from a second phase including said wax and said precursor, said precursor being insoluble in said activator, said wax and said activator being chemically inert to said precursor, said coating consisting essentially of solid particles of said second phase, each particle being surrounded by a thin, substantially continuous layer of said first phase.

15. A set of carbonless copying material comprising a donor sheet as set forth in claim **1** and an acceptor sheet juxtaposed to said donor sheet, said acceptor sheet including said electron acceptor contiguously adjacent said coating in an amount sufficient for reacting with said dye precursor and producing a visible amount of said dye when a portion of said first phase is transferred to said acceptor sheet by pressure applied to said set.

4,262,936

COLOR DEVELOPING INK CONTAINING ALIPHATIC ESTERS WITH 8-25 CARBON ATOMS

Akio Miyamoto, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 5, 1979, Ser. No. 1,087
Claims priority, application Japan, Jan. 5, 1978, 53-341
Int. Cl.[3] B41M 5/00; C09D 11/02; G03G 9/00
U.S. Cl. 282—27.5 15 Claims

1. A relief or offset printing color developing ink for pressure-sensitive recording which comprises: (i) at least one compound selected from a group consisting of aromatic carboxylic acids and the metal salts thereof, and (ii) an aliphatic ester having 8 to 25 carbon atoms, wherein said ester is the condensation product of a C_5–C_{20} aliphatic alcohol and a C_2–C_{10} aliphatic monocarboxylic acid.

4,262,937

CARBONLESS IMAGING SYSTEM

William J. Fraser, Forest Lake, and Norman P. Sweeny, North Oaks, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

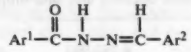
Filed May 23, 1979, Ser. No. 41,557
Int. Cl.[3] B41M 5/16, 5/22
U.S. Cl. 282—27.5 27 Claims

1. A color-forming composition comprising color-forming compound capable of forming colored complexes with transition metal salts, said color-former being selected from the group consisting of:

(1) dithiooxamide;

(2) N,N′-diorgano substituted derivatives of dithiooxamide;

(3) aromatic substituted hydrazones of the formula



wherein Ar^1 and Ar^2 are independently selected aromatic substitutents, Ar^1 being selected from the group consisting of phenyl, substituted phenyl, and substituted naphthyl, and Ar^2 being selected from the group consisting of o-hydroxy substituted phenyl and o-hydroxy substituted naphthyl; and

(4) mixtures of the above;

and a liquid cosolvent vehicle, wherein the improvement comprises a transfer control agent in an amount sufficient to reduce back-transfer, said transfer control agent being an acid capable of forming cosolvent-insoluble salts with transition metals and selected from the group consisting of oxalic acid, phosphoric acid, and mixtures thereof.

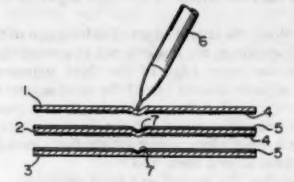
4,262,938

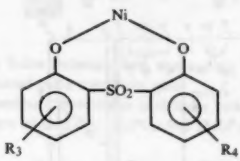
COLOR-DEVELOPING SHEET FOR PRESSURE-SENSITIVE RECORDING SHEETS

Akihiro Yamaguchi; Tadashi Kobayashi, both of Yokohama; Kenzaburo Yamuguchi, Kawasaki; Hisamichi Murakami, Yokohama; Noboru Yamato, Tokyo, and Akira Hasegawa, Tokyo, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated and Jujo Paper Co., Ltd., both of Tokyo, Japan

Filed Aug. 22, 1979, Ser. No. 68,580
Claims priority, application Japan, Oct. 11, 1978, 53-124753; Feb. 24, 1979, 54-21017
Int. Cl.[3] B41M 5/16, 5/22
U.S. Cl. 282—27.5 18 Claims

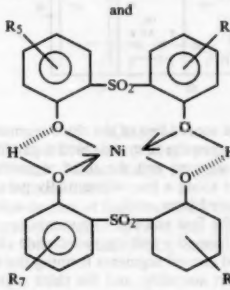
1. A color-developing sheet for pressure-sensitive recording sheets, said color-developing sheet comprising a base sheet and associated therewith a color-developing agent comprising at least one 2,2′-bisphenol-sulfone nickel salt selected from compounds of the following formula





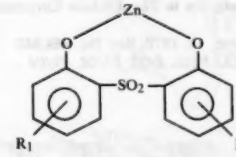
(II)

and



(III)

wherein R_3, R_4, R_5, R_6, R_7 and R_8 are identical or different, and represent a hydrogen atom, a halogen atom, an alkyl group containing 1 to 10 carbon atoms, a cycloalkyl group containing 3 to 10 atoms, an aralkyl group containing 7 to 11 carbon atoms, or a phenyl group, or a mixture of at least one 2,2′-bisphenolsulfone nickel salt of the above formulae (II) and (III) and at least one 2,2′-bisphenolsulfone zinc salt of the following formula.



(I)

wherein R_1 and R_2 are the same as R_3 through R_8 defined above.

4,262,939

SLIDE CHART MANUFACTURE

Karl R. Schoettle, Jr., 1 Private Way, Strafford, Pa. 19087

Filed Dec. 11, 1978, Ser. No. 968,122
Int. Cl.[3] B42D 15/00
U.S. Cl. 283—65 32 Claims

1. A method for producing an article of manufacture suitable for use as a slide chart from an essentially planar sheet having three adjacent segments, a first and second segment forming faces of the article of manufacture and having openings therein, and a third segment having two parallel, scored lines which extend longitudinally along the third segment for a

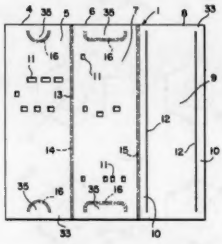
distance less than the length of the third segment, the method comprising:

applying, along the lateral edges of at least one of the second or third segments, for a width not to exceed the distance between the outer edge of the third segment and the nearest adjacent scored line of the third segment, a means for joining together the second and third segments,

folding the second segment and the third segment over and onto each other along a line substantially parallel to said longitudinal scored lines, and

joining together the second and third segments,

applying, along the lateral edges of at least one of the first or third segments, for a width not to exceed the distance between the outer edge of the third segment and the



nearest adjacent scored line of the third segment, a means for joining together the first and third segments,

folding the first segment and the third segment over and onto each other along a line substantially parallel to said longitudinal scored lines, and

joining together the first and third segments,

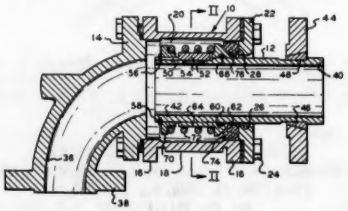
whereby there is formed a unitary, railed slide chart assembly, the first and second segments forming the outer faces of the slide chart assembly, and the third segment being positioned between the faces, those portions of the third segment which lie between the two scored lines of the third segment forming a slide which is positioned between the outer faces and a pair of rails, the pair of rails being formed from the remaining portions of the third segment.

4,262,940

INTERNALLY COMPENSATED SELF-ALIGNING ROTARY JOINT

Roger D. Wiedenbeck, and Eldon D. Jackson, both of Three Rivers, Mich., assignors to The Johnson Corporation, Three Rivers, Mich.

Filed Dec. 15, 1978, Ser. No. 969,945
Int. Cl.³ F16L *3/00, 27/04, 39/04*
U.S. Cl. 285—61 **4 Claims**



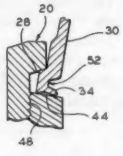
1. An internally compensated rotary joint characterized by its ability to accomodate axial expansion, minimize rotative friction and be self-aligning comprising, in combination, a hollow body member having an axis, ends and defining a chamber, an annular wear plate mounted upon one of said body member ends and having a central opening defined therein, a tubular nipple member having first and second ends, said nipple member extending through said wear plate opening wherein said first end is located within said body member chamber, said wear plate opening being of greater diameter than that of said nipple member whereby a significant radial clearance exists between said opening and nipple member, mounting means defined on one of said members for fixing said member against axial and rotative movement, a single annular nipple seal axially slidably mounted on said nipple member first end within said chamber having an annular sealing surface facing said wear plate and a pressure surface transverse to said body member axis exposed to said chamber, abutment means defined on said nipple member first end limiting axial movement of said nipple seal toward said first end, key means keying said nipple seal to said nipple member to prevent relative rotational movement thereto, an annular seal ring interposed between said sealing surface and wear plate and sealingly engaged thereby, said nipple seal sealing surface comprising a spherical segment engaging a complementary spherical surface defined on said seal ring defining a sealing area, said spherical surfaces having a center lying on the axis of said nipple member, the area of said nipple seal pressure surface being sufficiently larger than that of said sealing area whereby the pressure within said chamber produces an axial differential pressure on said nipple seal toward said seal ring to produce a predetermined sealing pressure at said sealing area, and an opening defined in said body member for establishing fluid medium communication between said chamber and the fluid medium to be conveyed through the rotary joint, said nipple member first end and abutment means being unsupported and freely radially and axially movable, the sole mechanical interconnection between said body member and said nipple member being through said seal ring at said spherical surfaces, said body member being self-aligning with respect to said nipple member due to said spherical surfaces and said clearance between said wear plate opening and said nipple member.

4,262,941

SELF-ALIGNING TUBE FITTING

James M. Lalikos, Springfield, and Kenneth E. Lefebvre, Hampden, both of Mass., assignors to Titeflex Corporation, Springfield, Mass.

Filed Sep. 6, 1979, Ser. No. 73,083
Int. Cl.³ F16L *19/00*
U.S. Cl. 285—110 **4 Claims**



1. A three-part flanged self-aligning seal comprising a first part in the form of a threaded nut with a shoulder forming a first half of a swivel joint, a second part in the form of a sleeve with an annular sealing flange which is arched in cross section, a shoulder being formed on said second part to form a second half of a swivel joint which cooperates with said shoulder in said nut to form a complete swivel joint, said shoulder being located a distance away from said arched flange, each of said shoulders forming a bearing angle which is in the approximate range of 15° to 45° with respect to a line perpendicular to the axis of said nut. a third part in the form of a threaded nipple fitting into said nut and capturing said second part therebetween, said nipple having a seat which is a flat surface tapering downwardly away from said shoulder for receiving and cooperating with said arched flange to form two concentric sealing rings pressed against said flat tapered surface when said nut is

tightened over said nipple, and an axial fluid passageway extending through said three parts, gas pressure in said passageway pressing said annular sealing flange into a tighter gas sealing engagement with said tapered flat surface.

4,262,942

TUBE FITTING ASSEMBLY WITH SHOULDER MEANS

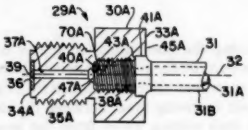
Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Enterprises, Inc., Mansfield, Ohio

Division of Ser. No. 657,060, Feb. 11, 1976, Pat. No. 4,126,929, which is a continuation-in-part of Ser. No. 554,395, Mar. 3, 1975, Pat. No. 3,977,710, which is a continuation-in-part of Ser. No. 425,561, Dec. 17, 1973, abandoned. This application Sep. 18, 1978, Ser. No. 942,889

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ F16L *13/14*

U.S. Cl. 285—382.5 **22 Claims**



1. A tube fitting assembly comprising in combination:

a fitting having an outside surface and a first surface defining a first orifice through at least a portion of said fitting;

said fitting having a second surface defining a second orifice through at least a portion of said first orifice and extending from said outside surface of said fitting;

said second orifice having a greater cross-sectional area than said first orifice;

one of said first and second orifices having inwardly and outwardly facing shoulder means defining areas of different cross-sectional area within said one of said first and second orifices;

a tubing having an inside and an outside tubing wall disposed in said orifices of said fitting;

and peripheral sealing bead means extending around the periphery of and unitary with said outside tubing wall;

said sealing bead means including first and second portions of said tubing inside wall axially contracted and folded into engagement with each other;

said sealing bead means including radially expanded first and second portions of said tubing outside wall in the area of said folded inside wall to establish sealing engagement with at least one of said inwardly and outwardly facing shoulder means

said sealing bead means being in tight engagement with said second surface of said second orifice,

said tube fitting having a given number of substantially helical threads forming said inwardly and outwardly facing shoulder means,

said tube having an initially unthreaded annular area with first and second adjacent parts,

said second part being part of said sealing bead means radially expanded into tight engagement with the roots of said threads and said first part being expanded into engagement with the crests of said threads but not into engagement with the roots of said threads.

4,262,943

MUFFLER CLAMP DEVICE

William J. Armstrong, Box 176, Lake Village, Ind. 46349

Filed May 7, 1979, Ser. No. 36,577

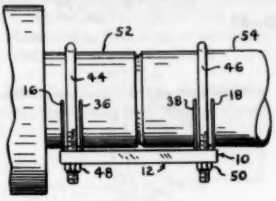
Int. Cl.³ F16L *13/14*

U.S. Cl. 285—420 **3 Claims**

1. A clamp device comprising:

a plate member having upstanding ends;

a second plate member having upstanding ends, said second plate member being mounted cradle fashion on said first plate member, said upstanding ends of said second plate member being spaced inwardly from said upstanding ends of said first named plate member, said first plate member



having holes between said upstanding ends of said first and second plate members; and

U bolt members inserted in said holes between said upright members of said first and second plate members.

4,262,944

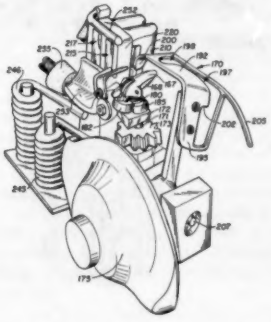
BROCCOLI BUNCHING AND TYING MACHINE

Gregory L. Branch, Salinas, Calif., assignor to Johnson Associates, Inc., Salinas, Calif.

Continuation-in-part of Ser. No. 7,547, Jan. 30, 1979. This application Apr. 4, 1979, Ser. No. 27,120

Int. Cl.³ A01D *59/04*; D04G *5/00*

U.S. Cl. 289—2 **21 Claims**



1. In a tying machine having means for forming a loop of string and knotting means actuated over a period of the machine's cycle in order to tie a knot in the ends of said loop, an improved string retaining mechanism comprising:

first and second independently actuable string gripping means, each said string gripping means having a first string gripping position adapted to secure a respective one of said ends and a second string releasing position, said first string gripping position of either one of said first and second string gripping means being characterized by a gripping force that is maintained substantially independently of the thickness of string material being gripped by the other of said first and second string gripping means; and

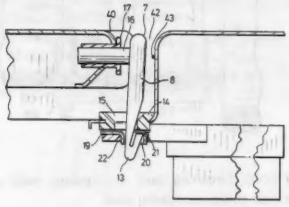
alternating actuation means for causing said first and second string gripping means to move from said first position to said second position on alternate cycles.

4,262,945

SAFETY LATCH FOR WASHER CLOSURE

Philip D. Paulson, Toronto, Canada, assignor to Inglis Limited, Toronto, Canada

Filed Apr. 27, 1979, Ser. No. 33,947
Int. Cl.³ E05C *3/16*
U.S. Cl. 292—89 **23 Claims**



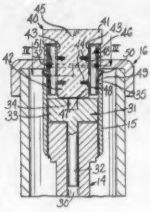
1. In an appliance for cleaning and treating clothes having a housing, a door with a handle portion being mounted on said housing over an opening to control access to within said appliance, and a closure for said door, said closure comprises means for impeding access to said handle portion for said door, a catch for releasably securing said door shut and means for locking said said catch, said impediment means being manually moveable to gain access to said handle where such movement releases said catch when unlocked, the arrangement being such that when said catch means is locked, movement of said impediment means to gain effective handle access is prevented.

4,262,946

METER LOCK SEAL

James A. Swisher, 464 Mill Hill Dr., Southport, Conn. 06490

Continuation-in-part of Ser. No. 812,718, Jul. 5, 1977. This application Aug. 2, 1978, Ser. No. 930,180
Int. Cl.² B65D *33/34*
U.S. Cl. 292—307 R **13 Claims**



1. A frangible plug assembly for sealing an opening in one end of a tubular member, comprising a head portion at least as large as the opening, a base portion adapted to extend from the head portion into the tubular member, both of said portions being of frangible material, and a locking element engaged with the base portion and said element including a resiliently deformable projection adapted to be non-releasably engaged with the tubular member.

4,262,947

METHOD OF MAKING VEHICLE BUMPER SHIMS AND ARTICLES PRODUCED THEREBY

Robert G. Farnam, Lake Forest, Ill., assignor to Colt Industries Operating Corp, New York, N.Y.

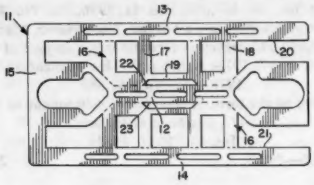
Filed Jan. 10, 1980, Ser. No. 110,846
Int. Cl.³ B60R *19/02*
U.S. Cl. 293—1 **4 Claims**

1. The method of making a light-weight bumper shim of the type having three parallel tines (two outer and a central tine) which consists in

(a) taking a rectangular blank;

(b) die-cutting from the blank a number of pieces to produce a part leaving two outer tines and a central tine with the latter integrally attached to each outer tine by four spaced legs;

(c) die-cutting from the part of (b) above two duo-bifurcated pieces interconnected by a connecting strap;



(d) locating the duo-bifurcated pieces over the upper and lower ends of the tines and securing them thereto to provide upper and lower reinforced load carrying areas flanking bolt receiving areas between the tines of the shim;

(e) and then cutting away from the lower duo-bifurcated piece the portions between the central tine and the outer tines.

4,262,948

METHOD AND MEANS FOR DISPOSING OF ANIMAL WASTE

Harry W. Emme, Jensen Beach, Fla., assignor to Clifton T. Hunt, Charlotte, N.C.

Continuation of Ser. No. 967,881, Dec. 8, 1978. This application Apr. 25, 1979, Ser. No. 33,117
Int. Cl.³ A01K *29/00*
U.S. Cl. 294—1 BB **2 Claims**

1. Apparatus for disposing of animal waste comprising a handle, a support frame fixed to one end of the handle, a disposable bag having a closed end and an open end carried by said frame, an upstanding annular seat extending above the support frame and about which the open end of the bag extends, a retaining ring including an inverted U-shaped channel and cross-section dimensioned to snugly engage the bag on opposite sides of the seat and frictionally retain the bag on the seat with the bag's closed end beneath the frame, said handle including an operative end portion and a free end portion typically connected together at their proximal portions, a cover pivotally connected to said operative end portion, a link extending between the cover and the free end portion of the handle and means pivotally connecting the link to the cover and to the handle and responsive to movement of the free end portion of the handle and its closed position overlying the

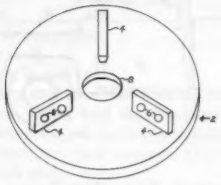
operative end portion of the handle to move the cover to its closed position overlying the support frame and disposable bag and responsive to movement of the free end portion of the handle to its extended position in alignment with the operative end portion of the handle to move the cover away from the support frame and the disposable bag.

4,262,949

LIFT ADAPTOR FOR AN ELECTROMAGNET FOR HYDRAULIC OR EXCAVATOR CRANE

Joseph W. Zaprazny, R.D.#1, P.O. Box 18, New Ringgold, Pa. 17960

Filed Nov. 2, 1979, Ser. No. 90,508
Int. Cl.³ B66C *3/16*; E02F *3/44*
U.S. Cl. 294—65.5 **7 Claims**



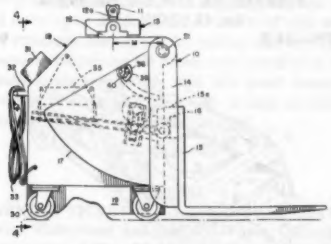
1. A lift crane adaptor for an electromagnet, comprising:
a metal plate having a magnet engaging face and an opposite lift crane engaging face,
at least three magnet mounting brackets fastened immovably to the magnet engaging face of said metal plate, said magnet mounting brackets containing fastening means for fastening said brackets to an electromagnet, and
at least one crane mounting bracket fastened immovably to the lift crane engaging face of said metal plate containing fastening means for fastening said crane mounting bracket to a lift crane boom.

4,262,950

LATERAL SHIFTING DEVICE FOR CRANE

Robert M. Ellingson, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Jan. 8, 1979, Ser. No. 1,490
Int. Cl.³ B66C *1/22*
U.S. Cl. 294—67 AA **5 Claims**



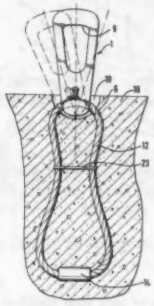
1. A device adapted to be suspended from a crane for lifting and laterally shifting a load comprising a frame having a fork attached thereto and a vertically moveable counterweight support mounted thereon, and means operably associated with said counterweight support to compensate for the weight of said load and to position said fork in a tilted condition while decreasing the moment arm between the crane and frame, a quadrant guard secured to each side of said frame and projects in a direction generally parallel to the confronting side of said counterweight support, each guard occupying a planar area at an approximate 54° angle with respect to the top of said frame, said counterweight support being equipped with an adjustable switch means for preventing the angle of tilt forward of said fork means from exceeding a predetermined number of degrees.

4,262,951

DEVICE FOR TRANSPORTING PREFABRICATED CONCRETE SECTIONS

Peter Hoyer, Memmingen, Fed. Rep. of Germany, assignor to Pfeifer Seil-Und Hebetechnik GmbH & Co., Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,848
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806261
Int. Cl.³ B66C *1/66*
U.S. Cl. 294—89 **5 Claims**



1. In an arrangement for transporting a prefabricated concrete component having a wire type anchoring element concreted into place therein, the anchoring element forming a loop within a hemispherical recess in the component with which a releasable hook-like component of lifting equipment is engageable, the improvement of the hook-like component comprising an integral eyelet part and a lower hook part made of cast steel, the hook part having a substantially spherical outer configuration and an inner bearing surface which is curved to receive said loop, said curved inner bearing surface having substantially the same radius as the radius of the curve of said loop, so that said hook part is simultaneously movable in said recess along said wire and around said wire as a center of rotation resulting in the capability of a substantially universal movement of said hook-like component with respect to said concrete component, and the eyelet part being in the shape of a plate which widens upwardly and having a hole by means of which, in use, the arrangement can be lifted, the smallest width of said plate corresponding substantially to the outer configuration of said hook part.

4,262,952

LIFTING TONG TOGGLE LOCK

Harvey Bradley, East Prospect, Pa., assignor to Bradley Lifting Corp., York, Pa.

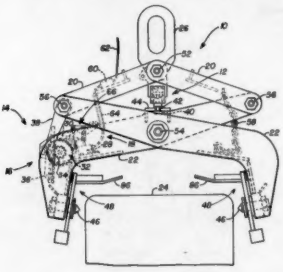
Filed Dec. 26, 1979, Ser. No. 106,491
Int. Cl.³ B66C *1/42*
U.S. Cl. 294—116 **5 Claims**

1. A lifting tong toggle lock adapted for installation and use upon a simple tong grab toggle structure provided with a tong latch and operable to maintain said tong grab toggle structure in an erected load bearing configuration upon tong engagement and subsequent intermediate handling of a load during removal and relocation deposit positioning thereof, said lifting tong toggle lock comprising in combination:
(a) an angularly dependent connecting arm pivotally assembled at the upper end thereof to a link arm-to-tong arm scissor-acting juncture of said tong grab toggle structure and at the lower end thereof adapted to support an elon-

gated rack member provided with a longitudinal plurality of gear teeth disposed along the tong-inwardly facing surface thereof,

(b) a gear-toothed pinion rotationally assembled to a tong arm of said tong grab toggle structure downwardly of said link arm-to-tong arm scissor-acting juncture thereof, said gear-toothed pinion adapted to receive in meshed communication the tong-inwardly facing longitudinal plurality of said elongated rack member gear teeth for transmission thereto of either extensive or retractive scissor-acting motion of said tong grab toggle structure,

(c) a non-reversing means provided with a radially disposed plurality of circumferential teeth and assembled on axial



alignment one side of said gear toothed pinion to be communicatively rotational therewith,

(d) a pawl pivotally adapted through a drive linkage for solenoid powered engagement and disengagement with at least one of said non-reversing means radially disposed plurality of circumferential teeth to thereby, upon pinion-transmitted extensive scissor-acting tong structure erecting motion thereto, fix said tong grab toggle structure in a locked load bearing erected configuration, and

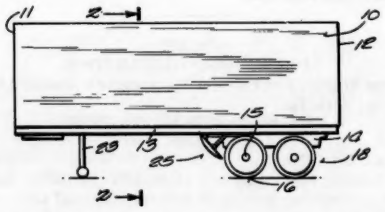
(e) a solenoid to power said drive linkage whereby said pawl is caused to pivotally fix and un-fix said tong grab toggle structure to and from the locked load bearing erected configuration.

4,262,953

UNDERMOUNTED AIR DEFLECTOR FOR TRUCKS AND TRAILERS

John C. McErlane, Green Bay, Wis., assignor to Premix, Inc., North Kingsville, Ohio

Filed Jul. 19, 1979, Ser. No. 59,001
Int. Cl.³ B62D *35/02*
U.S. Cl. 296—1 S **13 Claims**



1. A device for reducing the vacuum ordinarily developed in a region immediately aft of the rear of a longitudinally moving vehicle which has a body and laterally spaced apart rear wheels mounted on axles under and near the rear of the body, said device comprising:

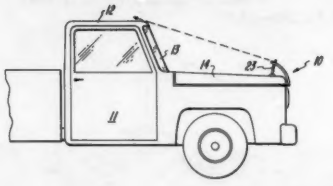
a deflector panel having a front surface on which air impinges when the vehicle is in motion, said panel extending laterally across the space between said rear wheels and being supported immediately ahead of said rear wheels at a longitudinally angle that results in a major portion of the impinging air being directed downwardly and rearwardly for flowing between said wheels into said region to thereby reduce the vacuum.

4,262,954

FRONTAL ASSEMBLY FOR VEHICLES

Marlon H. Thompson, Rte. 8, Box 121, Carthage, Miss. 39051

Filed Mar. 15, 1979, Ser. No. 21,164
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **2 Claims**



1. A frontal assembly for a vehicle having a hood, windshield, and roof comprising a deflecting plate attachable at the front of the vehicle having a convex frontal surface arranged for extending up and back along a curve as viewed from the side for causing air to flow upwardly and rearwardly in front of the hood in a rolling action, back over the hood, and over the roof of the vehicle whereby to reduce drag, increase wheel traction and shield the windshield;

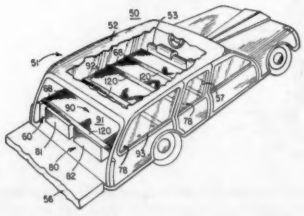
support means adapted to connect between said deflecting plate and the vehicle to resist airflow forces against said plate for holding said plate in position in relation to the hood during use, said support means including an upright member supported by and projecting up from the hood and passing through the deflecting plate and having external threads with nuts threaded thereon above and below said plate.

4,262,955

STORAGE PARTITION

Henry J. Duda, 3357 North Newland Ave., Chicago, Ill. 60634

Filed Mar. 12, 1979, Ser. No. 19,874
Int. Cl.³ B60P *3/05*
U.S. Cl. 296—24 R **9 Claims**



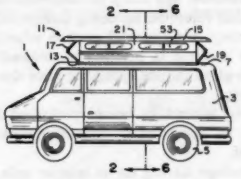
1. A storage partition for a motor vehicle, comprising an elongated flexible and opaque material, longitudinally spaced apart brace means extending transversely of said material, said brace being a metal bar convex in transverse cross section having the longitudinal ends thereof incurved forming two inwardly facing flanges, and fastening means on both of the longitudinally extending side edges of said flexible material for connection to complementary fastening means on the motor vehicle.

4,262,956

VEHICLE WITH RAISABLE ROOF

L. Birt Kellam, 27 Arrowhead Estates, Chesterfield, Mo. 63017

Filed Apr. 3, 1978, Ser. No. 892,980
Int. Cl.³ B62D *33/08*
U.S. Cl. 296—26 **12 Claims**



1. In a vehicle comprising:

(a) a vehicle roof;

(b) an opening in said roof;

(c) a secondary roof structure covering said opening;

(d) means for raising said secondary roof structure to a raised position spaced above said vehicle roof and lowering said secondary roof structure to a lowered position adjacent said roof;

(e) forward and rearward closure members for bridging the space between said roof and said secondary roof structure when said secondary roof structure is in its raised position; and

(f) a pair of side closure members for bridging the space between said roof and said secondary roof structure when said secondary roof structure is in its raised position,

the improvement wherein each of said four closure members is constructed of upper and lower rigid panels hinged to each other, to said roof and to said secondary roof structure, all four of said closure members moving solely by pivoting as said secondary roof structure is raised and lowered, without any sliding motion relative to said roof or said secondary roof structure, said forward and rearward closure members being constructed to fold outwardly from said opening over said roof when said secondary roof structure is in its lowered position and said side closure members being constructed to fold inwardly over said opening when said secondary roof structure is in its lowered position, whereby said secondary roof structure is maintained stable and aligned with said roof and said opening at all positions of travel of said secondary roof structure, said means for raising said secondary roof structure comprising lift means connected to at least one of said lower side panels, said side panel transmitting a lifting force from said lift means to said secondary roof structure to raise said secondary roof.

4,262,957

PARKING TICKET COLLECTION APPARATUS

Louis Wise, Homewood, and James E. Voves, Chicago, both of Ill., assignors to Jeffrey M. Morris, Chicago, Ill., a part interest

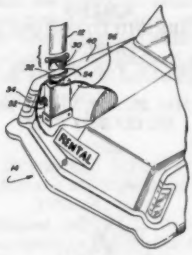
Filed Dec. 31, 1979, Ser. No. 108,943
Int. Cl.³ B60R *5/00*
U.S. Cl. 296—37.1 **27 Claims**

1. In combination with a motor vehicle including a body having an opening, a parking ticket apparatus comprising:

container means for holding at least one ticket;

an opening on said container means;

means for mounting said container means to the vehicle body to substantially align said container opening with said vehicle body opening in order to permit the insertion of said ticket into and through said vehicle body opening and said container opening and into said container means; and,



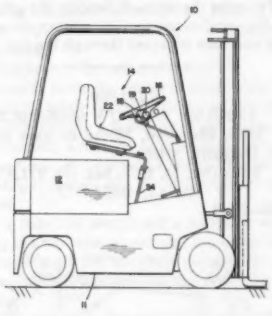
means normally preventing the removal of the ticket from said container means after it has been received therein.

4,262,958

ADJUSTABLE SEAT FOR AN INDUSTRIAL VEHICLE

Henry J. Houseman, Fairless Hills, and John S. McPherson, Philadelphia, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 7, 1979, Ser. No. 73,470
Int. Cl.³ B60N *1/02*
U.S. Cl. 296—65 R **8 Claims**



1. In an electric lift truck including a frame, an operator's station, a battery compartment disposed adjacent the operator's station, an operator's seat disposed above the battery compartment, a first seat support member attached to said frame, a second seat support member mounted on said first seat support member for rotation relative thereto about a substantially vertical axis, first latch means attached to said second seat support member to normally maintain said second seat support member in a first position relative to said first seat support member, means mounting said seat on said second seat support member for sliding movement in a substantially horizontal plane, and second latch means mounted on said second seat support member for normally maintaining said seat in a first position relative to said second seat support member; the improvement in which said first seat support member comprises a first substantially flat plate member having a boss formed at its upper edge; said second seat support member comprises a second substantially flat plate member having a pin attached to and extending from its lower edge, said pin being received within a socket formed in said boss; said first latch means comprising a latch plate member slidably attached to said second seat support member adjacent said lower edge and movable between a first position wherein said latch plate member overlaps said first and second plate members and a second position wherein said latch plate member is clear of said first

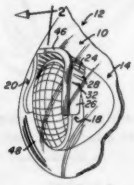
plate member to permit said second seat support member to rotate relative to said first seat support member about said pin.

4,262,959

HEADLIGHT GLARE SHIELD FOR USE WITH SLOTTED FAIRING

Charles A. Saunders, IV, P.O. Box 1246, Columbus, Nebr. 68601

Filed Mar. 29, 1979, Ser. No. 24,954
Int. Cl.³ B62J *17/02*
U.S. Cl. 296—78.1 **13 Claims**



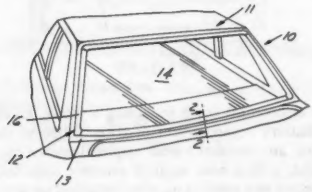
11. In combination: a transparent windscreen having a forwardly-facing contoured surface containing an inverted generally U-shaped slot bordered by a groove, and a glare shield comprising a flexible flap of opaque material formed into a tunnel-like hood adapted to extend across the top and down along both sides of a headlight disposed behind the windscreen, said flap having a front edge bordered by a flange sized and shaped to enter the recess defined by the groove bordering the slot in the windscreen so as to restore the contour to the latter when said web is passed through the slot therein.

4,262,960

VEHICLE WINDOW ASSEMBLY

William J. Fifer, Riverview, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1978, Ser. No. 971,972
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—84 R **2 Claims**



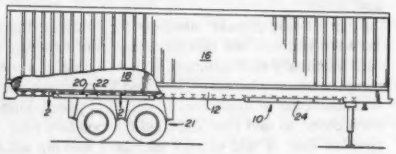
1. A vehicle window assembly, comprising:
a window frame having a peripheral wall portion and a flange extending into the window opening from one edge of the wall portion,
a window glass adhesively bonded to the flange with its peripheral edge in spaced relationship to the frame wall portion;
a resilient clip device interposed between the glass edge and the frame wall portion,
the clip device having a pedestal means seated on the wall portion with one end thereof contiguous to the flange;
the pedestal means having a pair of oppositely extending, upwardly inclined arms wiith an edge of each arm abutting the frame flange,
each arm terminating in an upstanding flange having an edge thereof extending from a frame flange abutting edge downwardly toward the arm to form a support ramp for an adjacent edge of the glass,
a pair of retainer prongs projecting beyond the end of the pedestal means opposite the end of the latter contiguous to the frame flange in substantially parallel relation to the wall portion,
an upstanding appendage projecting from the pedestal means and overlapping the marginal surface of the glass;
and an elongated reveal molding having at each of its longitudinal edges a retention lip,
one of the retention lips being hooked over the appendage and the other retention lip being interposed between the retainer prongs and the wall portion whereby the reveal molding is retained in position to conceal the marginal edge of the glass and the space between the latter and the wall portion,
the upstanding appendage being reinforced against lateral bending by an elongated rib extending down the exterior side thereof,
and the appendage having on its interior side a stop means controlling the extent to which the one molding retention lip may be hooked over the end thereof.

4,262,961

CONTAINER LIFT PAD

George A. Schmidt, Langhorne, Pa., assignor to Strick Corporation, Fort Washington, Pa.

Filed Jan. 5, 1979, Ser. No. 1,138
Int. Cl.³ B62D *21/02, 21/12*
U.S. Cl. 296—182 **10 Claims**



1. A container lift pad comprising an elongated generally L-shaped member having first and second legs, said first leg being generally vertical and being connected to said second leg by a rub rail, said second leg being generally horizontal, means on the first leg to facilitate attachment to a trailer container side rail, means on the second leg to facilitate coupling said second leg to each of a plurality of transverse beams on a trailer container, said last mentioned means including a plurality of tabs on said second leg, said tabs being connected to said second leg at one end of the tabs with the other end of the tabs being spaced from and above the elevation of the upper surface of said second leg.

4,262,962

STADIUM SEAT ARM GRIPPING TRAY

Paul J. Yust, 4645 N. Kansas, Kansas City, Mo. 64116

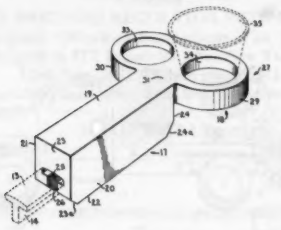
Filed Feb. 23, 1979, Ser. No. 14,335
Int. Cl.³ A47C *7/62*
U.S. Cl. 297—194 **19 Claims**

1. A tray device for use in association with one arm of a stadium seat,
which seat has at least one substantially horizontal arm portion extending along at least a portion of one side thereof,
such seat arm being of substantial T-shape cross section in the said horizontal portion thereof,
said tray device comprising, in combination:
an elongate beam member of substantially rectangular cross-sectional configuration having inner and outer ends thereof,
said beam member of a length equal to a substantial portion of the length of the horizontal portion of the arm of said stadium seat, as well as width and depth each greater than said seat arm,

a T-section passage formed in the lower portion of said beam member and extending therethrough lengthwise from the inner end thereof a distance at least substantially equal to the length of the horizontal portion of said arm,

said passage configured so as to slidingly receive the horizontal portion of said stadium seat arm in the length thereof in friction fitting fashion,

a tray member fixed to the outer end of said beam member past the seat arm engaging portion thereof,



the top surface of the beam member and the tray member being both substantially horizontal and in line with one another so as to provide a continuous, substantially horizontal resting surface of greater width and length than the seat arm for the user's arm,

the tray member being of lesser depth than the beam member whereby the tray is positioned above the top surface of the seat arm, and

the tray member having at least one recessed portion therein for the receipt of a container.

4,262,963

GUIDE RAIL ASSEMBLY FOR A VEHICLE SEAT

Heinz Bauer; Alfred Gedig; Reiner Frohnhaus; Burckhard Becker; Manfred Behrendt, and Jürgen Busch, all of Solingen, Fed. Rep. of Germany, assignors to C. Rob. Hammerstein GmbH, Solingen, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 11,953

Int. Cl.³ A62B *35/00*

U.S. Cl. 297—473 **11 Claims**

1. A guide rail assembly for a vehicle seat, comprising at least two pairs of engaging guide rails arranged respectively at lateral sides of the seat, a first rail of each pair being secured to the seat and including mounting means for a safety belt, and a second rail being secured to the floor of the vehicle; a first reinforcing hook-shaped member having a shorter hook-shaped portion and a longer portion, and a second reinforcing hook-shaped member having a shorter hook-shaped portion and a longer portion, said longer portion of said first reinforcing member being secured to said first rail in the proximity of said belt-mounting means, and said longer portion of said second reinforcing member being attached to said second rail, said shorter hook-shaped portions overlapping each other between said longer portions, said hook-shaped portion of said first reinforcing member being open downwardly, said hook-shaped portion of said second reinforcing member being open upwardly, said first guide rail and said second guide rail each having a vertically oriented U-shaped profile defining a shorter arm and a longer arm, said shorter arm exceeding at least three times the clearance between said arms, and said U-shaped profiles in each pair overlapping each other substantially over the whole length of said shorter arms, and said longer arm of each rail defining an end portion bent at right angles and extending below its shorter arm.

4,262,964

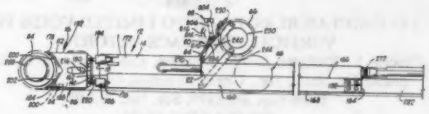
SYSTEM FOR DETECTING INTERFACES BETWEEN MINERAL SEAMS AND THE SURROUNDING EARTH FORMATIONS

James E. Ingle, Edmond, and Jack L. Moon, Oklahoma City, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 768,650, Feb. 14, 1977, Pat. No. 4,160,566. This application Jun. 11, 1979, Ser. No. 47,206

Int. Cl.³ E21C *35/24*

U.S. Cl. 299—1 **21 Claims**



1. A method for mining a mineral from a mineral seam in an earth formation with a miner having a positionable cutter assembly, comprising:

moving the miner into the mineral seam;

removing mineral from the mineral seam with the miner cutter assembly while moving the miner into the mineral seam, thereby forming a borehole in the mineral seam;

sensing continuously a first distance between one side of the borehole and one of the overburden and the underburden while moving the miner into the mineral seam, comprising the steps of:

providing a radiation source and a radiation receiver;

positioning the radiation source and the radiation receiver near one side of the borehole formed by the miner cutter assembly while moving the miner into the mineral seam;

emitting radiation from the radiation source while moving the miner into the mineral seam;

detecting with the radiation receiver some of the radiation emitted from the radiation source and reflected from the interface between the mineral seam and one of the overburden and the underburden while moving the miner into the mineral seam;

determining the first distance in response to the detected radiation; and

filling a substantial portion of the space between the wall and the radiation source with a material having a density greater than the density of air prior to the steps of emitting and detecting radiation while moving the miner into the mineral seam;

adjusting the position of the miner cutter assembly in response to the sensed first distance while moving the miner into the mineral seam;

withdrawing the miner from the mineral seam;

removing mineral from the mineral seam with the miner cutter assembly while withdrawing the miner from the mineral seam thereby enlarging the borehole formed while moving the miner into the mineral seam;

sensing continuously a second distance between one side of the borehole formed by the removal of mineral during the withdrawal of the miner and one of the overburden and the underburden while withdrawing the miner from the mineral seam, comprising the steps of:

positioning the radiation source and the radiation receiver near one side of the borehole formed by the miner cutter assembly while withdrawing the miner from the mineral seam;

emitting radiation from the radiation source while withdrawing the miner from the mineral seam;

detecting with the radiation receiver some of the radiation source and reflected from the interface between the mineral seam and one of the overburden and the underburden while withdrawing the miner from the mineral seam;

determining the second distance in response to the detected radiation; and

filling a substantial portion of the space between the wall and the radiation source with a material having a density greater than the density of air prior to the steps of emitting and detecting radiation while withdrawing the miner from the mineral seam; and

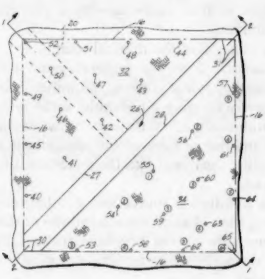
adjusting the position of the miner cutter assembly in response to the second distance while withdrawing the miner from the mineral seam.

4,262,965

TRIANGULAR BLASTING INTO LIMITED VOIDS FOR VERTICAL FREE FACE RETORTS

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Sep. 24, 1979, Ser. No. 78,040
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **42 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed within a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, such a fragmented mass being formed within side boundaries of a retort site having a generally rectangular horizontal cross-section, the method comprising the steps of:

excavating at least one generally vertical slot-shaped void extending diagonally across the horizontal cross-section of the retort site for forming a pair of substantially parallel, generally vertical free faces of formation adjacent such a void, leaving separate generally triangular-shaped zones of unfragmented formation defined generally by the side boundaries of the retort site adjacent the free faces adjacent the void;

placing explosive in each triangular zone of unfragmented formation and detonating such explosive for explosively expanding each triangular zone of formation toward corresponding free faces adjacent the void for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

establishing a retorting zone in an upper portion of the fragmented mass and advancing the retorting zone through the fragmented mass for producing liquid and gaseous products of retorting; and

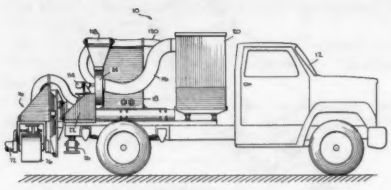
withdrawing liquid and gaseous products of retorting from a lower portion of the fragmented mass.

4,262,966

ROAD SURFACE REMOVING MACHINE

Edward J. Bouplon, Streetsboro, Ohio, assignor to Allied Steel & Tractor Products, Inc., Solon, Ohio

Filed Apr. 25, 1979, Ser. No. 33,180
Int. Cl.³ E01C *23/09*
U.S. Cl. 299—39 **4 Claims**



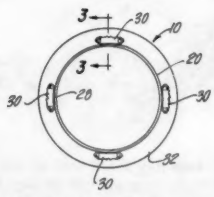
1. A machine for cutting a road surface to a predetermined depth, said machine comprising a modular assemblage mountable upon the chassis of a motor vehicle of the truck type, said modular assemblage including a cutter drum unit having a cutter drum assemblage, first means to move the cutter drum unit along a vertical axis, second means to rotate the cutter drum unit 90° about the vertical axis, third means to move the cutter drum unit laterally relative to the chassis, fourth means to move the cutter drum unit longitudinally relative to the chassis, a control console having means arranged for operation of said first, second, third and fourth means either individually or in combination, said cutter drum assemblage having a pluraity of cutter arms each rotatable 360° in planes parallel with said cutter drum unit vertical axis, each of said cutter arms having a cutter bit at one end an enlarged portion at the opposite end arranged to have the center of percussion of the cutter arm coincide with the cutter bit annd means to rotate the cutter drum assemblage whereby the cutter bits will successively impact upon the road surface.

4,262,967

WHEEL TRIM RETAINER

Edward G. Spisak, 35700 Oakwood La., Westland, Mich. 48185

Filed Nov. 28, 1979, Ser. No. 98,356
Int. Cl.³ B60B *7/00*
U.S. Cl. 301—37 R **7 Claims**



1. A retainer for attaching a wheel trim assembly to an axially extending flange adjacent the outer circumferential lip of a vehicle wheel comprising; a retainer ring, a plurality of retainer means uniformly spaced circumferentially of said ring, each of said retainer means including a base member attached to said ring and merging with a U-shaped portion open axially outwardly of said wheel, a blade extending radially outwardly from an end of a leg of said U-shaped portion and having an edge portion bitingly engagable with said flange of said wheel, a plurality of centering elements supported on said ring in uniformly spaced relation to each other and extending radially outwardly from said ring a distance less than said edge portions

of said blades, said centering elements each including a pair of arms joined together for relative deflection about a first curved portion therebetween and wherein one of said arms is supported relative to said ring for deflection about a second curved portion, said blades and said centering elements being engagable with uniformly spaced portions of said flange upon deflection of said blade portion radially inwardly a distance greater than the radial deflection of said centering elements.

4,262,968

BRAKE PRESSURE REGULATOR WITH BY-PASS

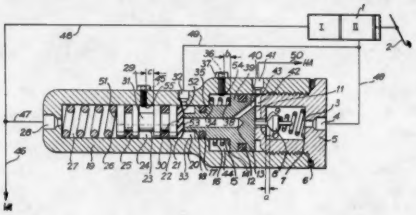
Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,241

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854164

Int. Cl.[3] **B60T** *8/26*

U.S. Cl. 303—6 C **8 Claims**



1. A brake pressure regulator with by-pass for a vehicle brake system comprising:

a first brake circuit associated with front axle brake cylinders of a vehicle;

a second brake circuit associated with rear axle brake cylinders of said vehicle;

a housing having a longitudinal bore therein coaxial of a longitudinal axis;

a control piston disposed in said bore coaxial of said axis;

a valve member disposed in said bore coaxial of said axis in a cooperating relationship with an adjacent end of said control piston and in a first pressure fluid line between an inlet chamber disposed in said bore remote from said control piston and an outlet chamber disposed in said bore adjacent said control piston, said inlet and outlet chambers being in said second brake circuit;

a second pressure fluid line disposed in said control piston having one end thereof connected to said inlet chamber and the other end thereof connected to said outlet chamber to by-pass said control piston when said first brake circuit fails, said one end of said second fluid line terminating in the other end of said control piston remote from said valve member; and

a closure piston disposed in said bore coaxial of said axis adjacent said other end of said control piston, said closure piston abutting said other end of said control piston under control of a spring force and pressure in said first brake circuit to seal said second fluid line from presurre in said second brake circuit when said first brake circuit is intact.

4,262,969

BRAKE CONTROL WITH PILOT ACTUATION

Probir K. Chatterjea, Mount Prospect, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jun. 8, 1979, Ser. No. 47,520

Int. Cl.[3] **B60T** *13/22*

U.S. Cl. 303—71 **8 Claims**

1. In a vehicle having a spring-apply, pressure release brake, a source of hydraulic pressure, and a reservoir, an improved control means for application of said brake, comprising:

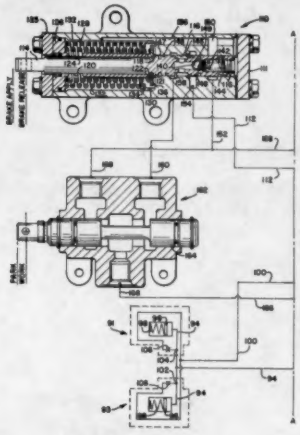
a slave valve having an outlet port, an inlet port connected to said source and a bore extending therebetween;

a first conduit connecting said outlet port with said brake;

a second conduit having an orifice therein connected between said first conduit and the reservoir;

a brake spool axially slideable in said bore and having a land on each end connected by a reduced diameter portion;

metering slots on one land for metering pressure from said inlet port to said outlet port;



passage means in said brake spool to communicate brake pressure against the end of said one land;

a pilot valve for generating a signal pressure;

a signal conduit connecting said pilot valve to said slave valve to direct said signal pressure against the end of the other of said lands; and

said metering slots and said orifice arranged to always permit a small flow of fluid from said source through said first and second conduits to the reservoir.

4,262,970

SEAL ASSEMBLY

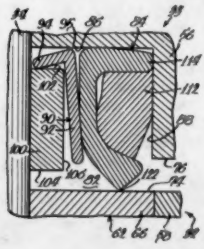
Glenn M. Haslett, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00724, § 371 Date Sep. 14, 1979, § 102(e) Date Sep. 14, 1979, PCT Pub. No. WO81/00699, PCT Pub. Date Mar. 19, 1981.

This PCT application filed Sep. 14, 1979, Ser. No. 134,620

Int. Cl.[3] **F16J** *15/34;* **B62D** *55/20*

U.S. Cl. 305—11 **15 Claims**



1. In a structure having means (86, 74) defining first (86) and second (74) variably spaced wall surfaces, improved sealing means (84) for maintaining a pressure seal between said wall surfaces (86, 74) comprising:

a resilient seal (114) disposed between said wall surfaces (86,

74) and being deflected therebetween to have a first portion (114) sealingly engaged with said first wall surface (86) and a second portion (102) sealingly engaged with said second wall surface (74); and

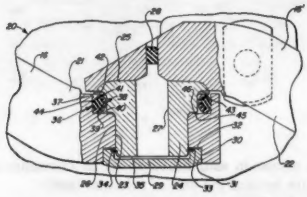
means (90) responsive to an increase in the spacing between said wall surfaces (86, 74) to extend said seal (114) to maintain said respective seal portions (114, 122) in sealing engagement with their associated wall surfaces (86, 74) whereby the decrease in the sealing force of said seal portions (114, 122) against said wall surfaces (86, 74) resulting from said spacing increase is reduced, said means responsive to said spacing increase comprising a compressible element (90) engaging and deflected between said seal (84) and at least one of said wall surfaces (86, 74).

4,262,971

TRACK CHAIN ASSEMBLY WITH INTEGRAL PIN AND LINK

James R. Shuler, Eureka, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 16, 1979, Ser. No. 21,137
Int. Cl.[3] B62D 55/20
U.S. Cl. 305—14 10 Claims



1. A track chain construction (10) for use in a track propelled vehicle, said track chain construction comprising:

a plurality of links (16,17) each having opposite end portions (21,22), one end portion (22) being provided with a recess and having a cylindrical tubular element welded to said one end portion (22) in said recess to define an integral laterally projecting pin (24), and the other end portion (21) defining a socket portion (23), said tubular element defining an axial oil reservoir (27), said links being arranged in a series (11) with the pin (24) of each link (16') pivotally received in the socket portion (23) of the succeeding link (16');

means (28,30,31,36) for sealingly closing said reservoir axially inwardly and outwardly of said tubular element to retain lubricating oil therein for use in lubricating the pivot joint (20) defined by the pin (24) in said socket portion (23); and

means (33,34,45,46) for preventing axial displacement of the pins from the socket portions defined by confronting axially facing shoulders (32,33,45,46) on said end portions (21,22) of the links.

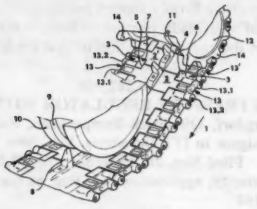
4,262,972

CRAWLER TRACK FOR TRACKED VEHICLES

Alfons B. Falk, Bonassund, Sweden, assignor to Aktiebolaget Hagglund & Soner, Ornskoldsvik, Sweden

Filed Feb. 28, 1979, Ser. No. 15,920
Claims priority, application Sweden, Mar. 2, 1978, 7802352
Int. Cl.[3] B62D 55/22, 55/28
U.S. Cl. 305—35 R 20 Claims

1. An articulated track comprising track links having forward and rear edges and a width dimension extending transverse to the longitudinal dimension of the track and at least two drag links provided between the forward edge of each track link and the rear edge of the adjacent track link, means articulating each drag link to each of the respective track links for movement about parallel axes which are transverse to the longitudinal dimension of the track, said drag links being spaced apart along the width dimension of the track links and being arranged within the effective width of the track links each track link having a body portion and a side flange portion and said articulating means being link rods, one end of each



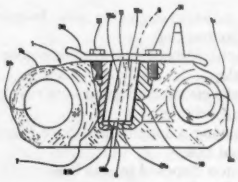
link rod being positioned in a socket in a track link body and the other end being positioned in a socket in the corresponding track link flange.

4,262,973

JUNCTION LINK FOR ENDLESS CHAIN TRACKS FOR TRACKED VEHICLES

Walter Grilli; Aldo Crotti, and Emidio Manicardi, all of Modena, Italy, assignors to Ital-Tractor I.T.M., Castelvetro, Italy

Filed Mar. 13, 1979, Ser. No. 20,199
Claims priority, application Italy, Mar. 14, 1978, 40042 A78
Int. Cl.[3] B62D 55/20
U.S. Cl. 305—54 4 Claims



1. A chain track junction link for endless chains of tracked vehicles, the link comprising a first portion and a second portion (1*a*, 2*a*) complementary to one another; each of said portions including a respective junction surface (5*a*, 5*b*) complementary to one another and shaped and sized to mate with the other said junction surface, each said portion of the link containing entirely a respective one of two horizontally extending apertures (2*a*, 2*b*) of the link for fixing the link to pivots and bushings of reciprocal connection of chain track links; at least one connection member (10) having two ends of approximately prismatical shape; at least a first groove (11) extending along a center line of at least one lateral face of said connecting member, developing in the direction of generatrices, which defines two opposite interior faces (12*a*) and (12*b*) internal with respect to said first groove; a respective second groove (20*a*, 20*b*), made respectively in each of said portions of the link, inward from respective said junction surfaces and positioned approximately parallel to the latter, each said second groove defining at least one interior face (21*a*, 21*b*) shaped and positioned to mate with a respective one of said interior faces (12*a*, 12*b*) of said first groove (11) and said second groove being shaped and positioned for mating said two junction surfaces (5*a*, 5*b*) forming a single aperture of an approximately prismatical form at its ends and shaped and sized to receive therein said connecting member (10),

wherein said opposite faces (12*a*, 12*b*) internal with respect to said at least one first groove (11) of said connecting member (10) are reciprocally inclined with respect to the direction of the generatrices with a slight inclination

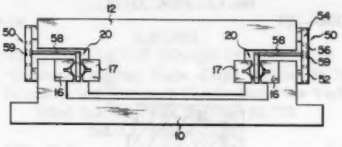
which converges in the direction of a top, external face (10*a*) of said connection member.

4,262,974

LINEAR BEARING APPARATUS

Toru Tojo, Yamato, and Yoshinori Nishio, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 4, 1979, Ser. No. 82,226
Claims priority, application Japan, Oct. 12, 1978, 53-124623
Int. Cl.³ F16C *29/04, 29/12*
U.S. Cl. 308—6 R **6 Claims**



1. A linear bearing apparatus which comprises:

a first guide rail fitted to a first physical body to extend lengthwise thereof and a second guide rail fixed to a second physical body to extend lengthwise thereof, said second physical body being moved toward either sense of the prescribed direction relative to the first physical body;

a retainer assembly which is disposed between the first and second guide rails, and is formed of a plurality of rolling elements and a retainer for supporting said rolling elements, and, where the second physical body is moved relative to the first physical body for a certain distance, is moved relative to the first physical body for substantially half said distance toward the same sense toward which the second physical body is carried; and

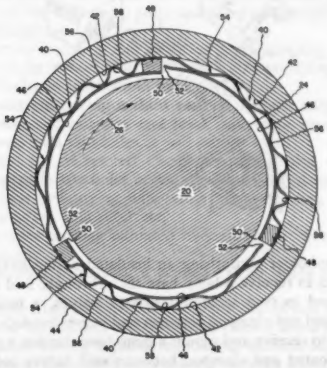
urging means for imparting an elastic force to the retainer assembly to prevent said retainer assembly from progressively drifting when the second physical body repeatedly moves relative to the first physical body toward either sense of a direction alternately.

4,262,975

COMPLIANT JOURNAL BEARING WITH ANGULAR STIFFNESS GRADIENT

Hooshang Heshmat, Troy, and Wilbur Shapiro, Schenectady, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,502
Int. Cl.³ F16C *32/06, 39/04*
U.S. Cl. 308—9 **9 Claims**



1. A hydrodynamic compliant journal bearing for dynamically supporting a rotor in a journal sleeve on a plurality of compliant journal bearing pads affixed to the inside surface of the journal sleeve, each of said pads comprising:

a flexible sheet metal bearing sheet having a bearing surface in bearing relationship to said rotor and operatively attached to the sleeve along one edge of said bearing sheet extending transversely to the direction of rotation of the rotor;

a resilient supporting structure, operatively fixed to the sleeve and lying between said bearing sheet and the sleeve for resiliently and compliantly supporting said bearing sheet;

said supporting structure including a support element having resilient elevations projecting therefrom and operatively supporting said bearing sheet;

said supporting structure varying in stiffness along its length from leading toward trailing edges thereof, in the sense of the direction of rotor rotation, establishing a stiffness gradient which increases from said leading edge toward said trailing edge to produce a pad profile, under hydrodynamic loading, that is canted with respect to the rotor surface, said canted profile sloping toward the rotor surface from leading to trailing edge in operation with an inclination which increases with increasing rotor rotation speed;

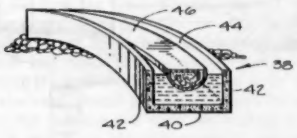
whereby the operation of the bearing throughout its speed and load range is stable.

4,262,976

BEARING SUPPORT

Alcide Bertrand, Silver Creek Road, Salmon Arm, Canada

Filed Oct. 26, 1979, Ser. No. 88,300
Claims priority, application Canada, Jul. 31, 1979, 332933
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 **3 Claims**



1. Apparatus for supporting a windmill or the like comprising a vertically oriented, liquid filled tank,

an air filled cylinder buoyantly supported in said tank and having upper and lower axially aligned shafts,

the upper shaft being adapted to support a windmill and the lower shaft being pivotally mounted in the lower end of said tank,

and a horizontal, circular, liquid filled channel positioned concentrically relative to said tank,

an annular float member positioned in said channel, and

means connecting the float member with the upper shaft of the cylinder in said tank.

4,262,977

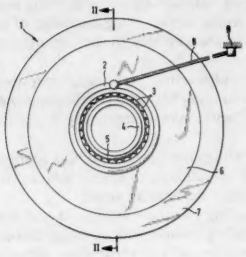
FLEXURAL VIBRATION DAMPER

Kurt Böck, Olching, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Munich, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,220
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744040
Int. Cl.³ F16C *27/00*
U.S. Cl. 308—26 **6 Claims**

1. A damper for eliminating or reducing flexural vibrations in a rotating shaft, comprising a damper mass means surrounding the shaft at a radial distance and a support means, said support means being rotatably mounted on the shaft end sup-

porting said damper mass means by way of at least one spring means, and said damper being operatively connected with a relatively fixed part, characterized in that one of the parts



consisting of the support means and the damper mass means is operatively connected with the relatively fixed part by way of an elongate flexible connecting element strung therebetween, and wherein said flexible connecting element is a wire cable.

4,262,978

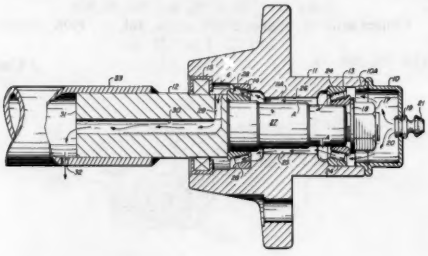
BEARING ASSEMBLIES

Woodrow W. Everett, 3908 W. Van Buren, Phoenix, Ariz. 85021

Filed Nov. 2, 1979, Ser. No. 90,661

Int. Cl.[3] F16C *1/24, 33/72*

U.S. Cl. 308—36.1 **9 Claims**



1. A sealed bearing assembly comprising:

a spindle,

one end of said spindle being threaded,

bearing means positioned over said spindle,

a hub having a hollow cylindrical portion,

said cylindrical portion being sleeved over one end of said spindle and said bearing means,

attachment means threaded over said one end of said spindle for contact with said bearing means for maintaining said bearing means in contact with said cylindrical portion of said hub,

a grease seal positioned within said other end of said cylindrical portion and extending annularly around said spindle between the inside periphery of said hub and said spindle,

a hub cap for receiving grease under pressure interiorly thereof secured to said cylindrical portion of said hub and sealing said one end of said hub,

said hub and said spindle defining a first passageway extending from the interior of said hub cap between the inside periphery of said cylindrical portion of said hub and said spindle and along said spindle and through said bearing means to said grease seal, and

a second passageway extending from said first passageway at a point between said bearing means and said grease seal laterally through at least a part of said spindle to a third passageway,

said third passageway extending longitudinally of said spindle and outwardly thereof to atmosphere.

4,262,979

MULTI-PART PLASTIC CAGE FOR ROLLING BEARINGS

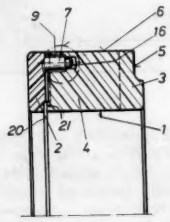
Klaus Kispert, Schweinfurt, and Hans Meining, Dittelbrunn, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,809

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 7810515[U]

Int. Cl.[3] F16C *33/38*

U.S. Cl. 308—217 **10 Claims**



1. In a multi-part plastic cage for rolling bearing elements wherein an axially extending web element has an end engaging a cover element, and a first recess on one of said elements receives a connecting pin extending from the other of said elements, whereby the pin may be ultrasonically welded in said recess; the improvement wherein said cover has a second recess shaped to receive said end of said web for absorbing radial and circumferential forces, the lateral walls of said pin being spaced from the lateral walls of said first recess adjacent said end of said web.

4,262,980

LAMP HOLDER

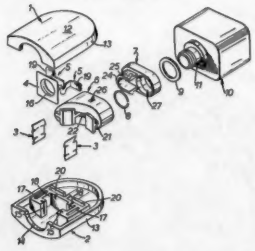
Robert Heritage, London, England, assignor to Rotaflex Limited, London, England

Filed Apr. 26, 1979, Ser. No. 33,802

Claims priority, application United Kingdom, Apr. 28, 1978, 17073/78; May 31, 1978, 17073/78

Int. Cl.[3] F21M *3/18;* F21V *21/30*

U.S. Cl. 339—1 L **3 Claims**



1. A lampholder comprising an insulated casing having an end adapted to receive a lamp base therethrough, said casing being formed in two secured insulated halves, a mounting socket located and clamped between said halves inward of said casing end to receive and mount a lamp base therein, a pair of contacts located and clamped between said halves independently of said mounting socket and inwardly thereof relative to said end, said contacts being associated with the socket for

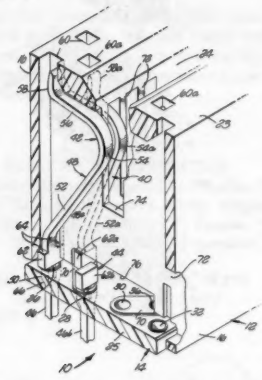
engagement by a socket mounted lamp base, and a mounting stirrup directly mounting the casing to permit pivotal movement of the casing relative to the stirrup about a transverse axis perpendicular to the axis of the mounting socket, said casing halves having opposed arcuate edge portions, said stirrup having a guide part received and slidably retained between the opposed edge portions of the casing halves with and independent of said socket and said contacts, said guide part cooperating with said edge portions to permit said casing halves, with the clamped mounting socket and contacts, to slide around the said guide part, whereby said casing halves directly receive therebetween and constitute the sole means for retaining said mounting socket, said contacts, and said stirrup.

4,262,981

PRINTED CIRCUIT BOARD CONNECTOR

David S. Goodman, Mission Viejo, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,772
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—17 C **7 Claims**



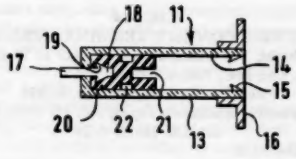
1. A printed circuit board connector comprising:
a substrate having first and second rows of plated-through holes therein, said rows being longitudinally offset relative to each other;
a first set of printed circuit board engaging contacts mounted in the holes in said first row, said first set of contacts being devoid of wire-wrap posts;
individual, spaced apart feed-through contacts mounted in the holes in said second row, said feed-through contacts embodying wire-wrap posts extending substantially below said substrate;
conductive traces on said substrate interconnecting each of said holes in said first row with a corresponding one of said holes in said second row;
said substrate having a third row of plated-through holes therein, said holes in said third row being transversely aligned with said holes in said second row;
a second set of printed circuit board engaging contacts mounted in said holes in said third row, said second set of contacts embodying wire-wrap posts extending substantially below said substrate;
an insulator housing mounted over said contacts onto said substrate;
said housing containing a printed circuit board receiving slot;
said three rows of holes being on one side of said slot;
said first and second sets of printed circuit board engaging contacts having coplanar contacting sections adjacent to said slot, the longitudinal spacing between the contacting sections of said printed circuit board engaging contacts being less than the longitudinal spacing between the wire-wrap posts of said feed-through contacts and said second set of contacts; and
said feed-through contacts being devoid of contacting sections for engaging a printed circuit board inserted into said slot.

4,262,982

ELECTRICAL SOCKET USEFUL FOR CONNECTING AN ELECTRODE CATHETER TO A CARDIAC PACEMAKER CASING

John Kenny, Prestwick, Scotland, assignor to Needle Industries Ltd., Studley, England

Continuation-in-part of Ser. No. 884,830, Mar. 9, 1978, Pat. No. 4,220,386. This application Apr. 11, 1979, Ser. No. 29,280
Claims priority, application United Kingdom, Mar. 10, 1977, 10280/77
The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—60 R **8 Claims**



1. An electrical socket for receiving a plug member having an insulating body portion and a conducting spigot projecting from said body portion and for making an electrical connection to the conducting spigot, which electrical socket comprises a body defining a bore for sealingly receiving a plug member body portion, a block of conducting, resilient, rubber material located within said bore, the block of rubber material defining a first recess for receiving the spigot of said plug member and defining a further recess in the form of an annular channel disposed around said block of conducting rubber material, part-way between the ends thereof, and spaced from said first recess and an electrical contact provided through the walls of the socket member defining said bore and making electrical connection with said block of rubber material, and said first recess in said block of conducting rubber material having a smaller cross-sectional dimension than that of said spigot, whereby the block is deformed by insertion of a plug member spigot into said recess to make an electrical connection therebetween, said deformation of the block of rubber material caused by the insertion of said spigot into said first recess being accomodated at least in part by a reduction in volume of said further recess.

4,262,983

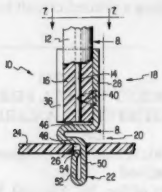
CIRCUIT BOARD CONNECTOR FOR INSULATED WIRE

Stephen B. Bogese, II, Roanoke, Va., assignor to Virginia Plastics Company, Roanoke, Va.

Filed Feb. 8, 1979, Ser. No. 10,547
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 C **11 Claims**

1. An electrical connector, which comprises an electrically conductive piece of sheet metal which is integrally formed to provide:
tubular means adapted to receive an insulated wire therewithin;
pin means adapted to extend through an aperture in a circuit board; and
isolation means extending between said tubular means and said pin means for spacing said tubular means from the top surface of said board;
wherein said tubular means includes means integrally

formed therefrom adapted to pierce the insulation of said insulated wire and to establish electrical contact with said wire; and



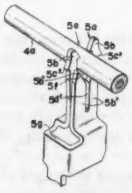
wherein said tubular means comprises a cylindrical barrel, said insulated wire adapted to extend to the bottom end of said barrel, and said isolation means further comprises means for substantially covering said bottom end of said barrel.

4,262,984

ELECTRIC CONTACT TERMINAL MEMBER

Toru Takahashi, Yokohama, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 59,036
Claims priority, application Japan, Jul. 19, 1978, 53-87053
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 R **4 Claims**



1. An electric contact terminal member for accommodating therein a single core cable having exterior insulation, said terminal member comprising:

a first metal plate having formed therefrom a first pair of contact arms defining therebetween a first slot having an open outer end adjacent outer ends of said first pair of contact arms;

said first slot including an inlet portion extending inwardly from said open outer end of said first slot, said inlet portion being dimensioned to receive and grasp a single core cable including insulation thereof without damage to the insulation;

said first slot including a press-in portion extending inwardly from said inlet portion, said press-in portion being dimensioned to, upon the cable being pressed thereinto, receive the core of the cable, while the cable insulation is broken by facing edges of said first pair of contact arms;

said first pair of arms having adjacent said outer ends thereof integral projection means extending into said inlet portion of said first slot for aiding in grasping the cable;

said inlet portion of said first slot and said projection means forming temporary holding means for enabling accurate positioning of the cable before the cable is pressed into said press-in portion;

a second metal plate having formed therefrom a second pair of contact arms defining therebetween a second slot having an open outer end adjacent outer ends of said second pair of contact arms;

said second metal plate being positioned adjacent said first metal plate, with said second pair of contact arms parallel to said first pair of contact arms, and with said second slot parallel to said first slot;

said second slot being dimensioned to, upon the cable being pressed thereinto, receive the core of the cable, while the cable insulation is broken by facing edges of said second pair of contact arms; and

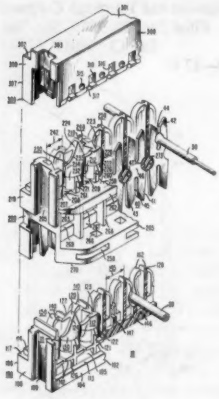
said outer ends of said second pair of contact arms being outwardly pointed to facilitate breaking of the cable insulation upon the cable being pressed from said temporary holding means into said press-in portion of said first slot and into said second slot.

4,262,985

CONNECTOR FOR PLURAL CONDUCTORS

Almon A. Muehlhausen II, Thousand Oaks, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 26, 1979, Ser. No. 23,829
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—99 R **33 Claims**



1. An index strip **(100)** for receiving axially elongated conductors or wires including a base **(102)** of electrically insulative material on which are mounted a plurality of spaced upright members **(110)** defining a plurality of wire-retaining slots **(112)**, each wire-retaining slot having a first end substantially defined by two flexible inwardly curved flanges **(130)** attached to sidewalls **(126)** of corresponding upright members **(110)**, and having free ends opposite their sidewall attachments, the flanges being deflectable to vary the dimension of the first end for a conductor **(20)** inserted and to deflect inwardly during wire indexing to draw said free ends further inwardly along the axial direction of the inserted conductor to securely grip the inserted conductor, the deflected flanges tending to bias toward each other to create a tighter holding grip on the conductor when conductor pull out opposite the inward deflection is attempted.

4,262,986

ELECTRICAL INTERCONNECT DEVICE

Gabriel B. Cherian, York; William S. Scheingold, Audubon, and Steven J. Kandybowski, Tower City, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

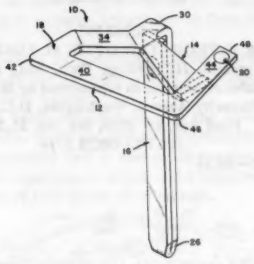
Filed Sep. 12, 1979, Ser. No. 75,292
Int. Cl.³ H01R *13/24*
U.S. Cl. 339—252 R **2 Claims**

1. A device for providing an electrical interconnect between diverse electronic components, comprising:

a. a lower section comprising a leg for insertion into a board or the like or about which a wire may be wrapped; and

b. an upper section connected and positioned perpendicularly to the lower section and having a connecting strap

and an elongated spring arm which includes a first portion extending obliquely from said strap, a second portion connected to the first portion and extending in a direction parallel to the strap, a third, elongated portion connected to and extending at right angles to the second portion and



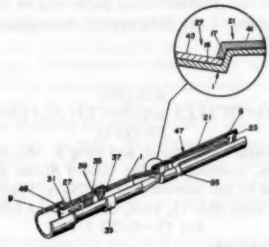
a fourth portion connected to the third portion and extending back towards the leg, said fourth portion being the free end of the spring arm and having a contact thereon adapted to engage a conductive trace on a generally rigid circuit board or the like.

4,262,987

ELECTRICAL CONNECTOR

David O. Gallusser, Oneonta; Donald L. Pfendler; Herbert K. Uhlig, both of Bainbridge; David L. Frear, Binghamton; Valentine J. Hemmer, Sidney, and Gary C. Toombs, New Berlin, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 27, 1979, Ser. No. 79,273
Int. Cl.[3] H01R *11/08, 13/12*
U.S. Cl. 339—258 R **10 Claims**



1. An electrical contact assembly comprising:

a tubular liner having a front mating portion, a rear wire receiving portion and a center section defining an annular bushing retention recess in the outer surface of the tubular liner between said front and rear portions, said front mating portion comprising a plurality of fingers forming a socket; and

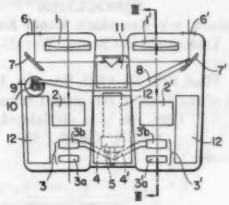
a sleeve telescopically mounted over at least one portion of the tubular liner and secured thereon by deforming said sleeve in place into the annular bushing retention recess in the tubular liner, said sleeve being axially longer than the tubular liner and with the front portion of the sleeve being turned inward and angularly rearward to form a guide for a mating pin type contact leading to said socket and with the rear portion of the sleeve extending beyond the wire receiving portion of the tubular liner and being radially enlarged to receive the insulating jacket adjacent the stripped end of a wire received in the wire receiving portion of the tubular liner.

4,262,988

BINOCULARS WITH AUTOMATIC FOCUSING SYSTEM

Isao Ishibai, Machida, and Kunimitsu Kobayashi, Murayama, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 108,108
Claims priority, application Japan, Apr. 23, 1979, 54-48951
Int. Cl.[3] G02B *7/11, 23/00*
U.S. Cl. 350—36 **5 Claims**



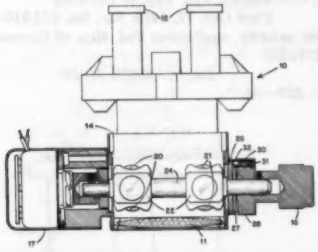
1. Binoculars comprising a focus detecting element module, movable reflecting member and a fixed reflecting member for introducing first and second rays of light to said focusing detecting element module, first and second oculars, means for moving said oculars according to an output control signal produced by said focusing detecting element module for focussing the binoculars, and first and second light entry windows for distance metering provided for supplying light to said movable reflecting member and said fixed reflecting member, respectively, the light path through said light entry windows being independent of that through objectives of said binoculars.

4,262,989

SURGICAL MICROSCOPE WITH SOLENOID DRIVEN MAGNIFICATION CHANGER

George F. Waters, Sturbridge, Mass., assignor to Applied Fiberoptics, Southbridge, Mass.

Filed Nov. 5, 1979, Ser. No. 91,255
Int. Cl.[3] G02B *7/16*
U.S. Cl. 350—39 **7 Claims**



1. A surgical microscope with a power operated magnification changer comprising:

(a) a long viewing distance stereo microscope having a single objective lens;

(b) a magnification changer mounted on a rotary shaft behind said objective lens, said changer having optics for changing the magnification of said microscope on rotation of said shaft wherein said optics are two sets of galilean optics aligned with respective stereo paths of said microscope and leaving an open aperture aligned with said stereo paths when rotated 90 degrees;

(c) detent elements connected to one end of said rotary shaft for precise positioning of said shaft at four 90 degree spaced positions, said detent elements comprising a plate carrying two perpendicular V grooves and a detent actua-

tor mounted facing said plate under pressure so as to drop into said grooves when aligned;

(d) a solenoid actuator mounted on a first end of said rotary shaft and secured to the outside of said microscope for rotating said shaft in predetermined steps; and,

(e) a manual knob mounted on a second end of said rotary shaft.

4,262,990

BINOCULAR

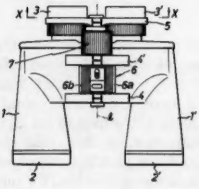
Ichiro Kamakura, c/o Kamakura Kohki Kabushiki Kaisha, of No. 6-12, Tsukagoshi 3-Chome, Warabi-Shi, Saitama-Ken, Japan

Filed Feb. 16, 1979, Ser. No. 12,894

The portion of the term of this patent subsequent to Oct. 23, 1996, has been disclaimed.

Int. Cl.³ G02B *7/04*

U.S. Cl. 350—44 **5 Claims**



1. A binocular having a first operating member and a second operating member for operating a zooming mechanism and a focusing mechanism respectively, the first operating member and the second operating member being mounted in tandem on a center axis coupling a pair of telescopes of said binocular, one of the two operating members being operated in a seesaw motion, while the other operating member is operated by rotation.

4,262,991

MECHANICAL STAGE FOR MICROSCOPES

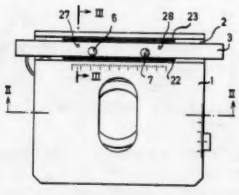
Heinrich Wagener, Gottingen, and Heinz Blessman, Rosdorf, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Oct. 17, 1978, Ser. No. 952,010

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1977, 2751207

Int. Cl.³ G02B *21/26*

U.S. Cl. 350—86 **6 Claims**



1. A mechanical stage for microscopes including a fixed part, a stage plate displaceable along said fixed part in one rectilineal coordinate direction, and an object guide displaceable along said stage plate in a second rectilineal coordinate direction, said stage plate containing grooves for receiving wire-race ball-bearing linear guides which cooperate with corresponding wire-race ball-bearing linear guides arranged in grooves in said fixed part and in grooves in said object guide, characterized by at least one of said wire-race ball-bearing linear guides in the grooves of said fixed part (**9**) and at least one of said wire-race ball-bearing linear guides in the grooves in said object guide (**3**) each being arranged alongside a corresponding adjustment rail (**16** and **24** respectively), each of said adjustment rails resting against corresponding spring elements and providing at least two spaced points of spring-loaded contact, and said spring elements acting perpendicular to the longitudinal axis of said fixed part and to the longitudinal axis of said object guide, respectively.

4,262,992

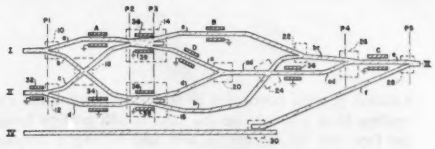
VARIABLE INTEGRATED OPTICAL LOGIC ELEMENT

John W. Berthold, III, College Park, Md., assignor to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Filed Apr. 18, 1979, Ser. No. 31,257

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.14 **12 Claims**



1. An optical logic element comprising:

Two or more single-mode input optical waveguides for inputting lowest order single-mode optical energy;

a single-mode output optical waveguide for outputting lowest order single-mode optical energy representative of a logic operation performed on said input optical energy;

a plurality of single-mode optical waveguide paths of equal optical lengths interconnecting said input and output optical waveguides, said paths including means for switching light energy in certain of said paths to certain other of said paths; and

means for varying the optical length of predetermined ones of said paths such that the phase of the light energy propagating in said predetermined paths may be shifted relative to the phase of the light energy propagating in other of said paths.

4,262,993

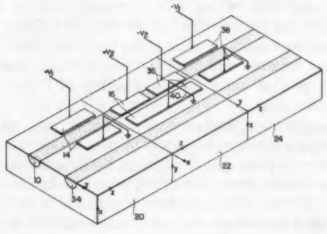
ELECTROOPTICALLY BALANCED ALTERNATING $\Delta\beta$ SWITCH

William K. Burns, Alexandria, and Sang K. Sheem, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1980, Ser. No. 111,443

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.14 **3 Claims**



1. In an electrooptical waveguide modulating/switching device having at least two waveguide channels formed on a crystalline substrate, switching and modulation being effected by changing the propagation constant of one of said waveguides by means of vertical and horizontal electric fields ap-

plied to one of said waveguides by sets of voltage-bearing electrodes when an optical signal is propagated through said one waveguide, the improvement comprising:

a substrate which is formed in sections, each containing at least one set of said electrodes and a portion of said waveguides extending to at least one edge of said substrate section, said sections being abutted so that said waveguide portions couple together effectively to form two spaced waveguides,

alternating substrate sections being placed together so that the easy axis of one substrate section is orthogonal to that of each abutting section,

the electrodes being arranged so that the horizontal and vertical electric fields are physically symmetrical about a center of symmetry and so that equal numbers of sets of electrodes for applying a vertical and a horizontal field are on each side of said center of symmetry.

4,262,994

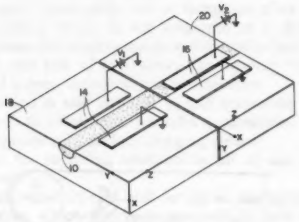
ELECTRO-OPTICALLY BALANCED MULTI-PIECE OPTICAL WAVEGUIDES

Sang K. Sheem, 7123 Layton Dr., Springfield, Va. 22150

Filed Jan. 11, 1980, Ser. No. 111,444

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.14 **8 Claims**



1. An electrooptical waveguide assembly comprising:

at least one pair of sections, each section comprising a crystal substrate the index of refraction of which can be changed by an electric field, an optical waveguide running longitudinally in or on said substrate and electric field means for applying an electric field to said waveguide,

said pair of sections being physically arranged so that the longitudinal axes of their waveguides are parallel and abut one another so that said waveguides couple together and one of the X, Y, Z axes of one crystal substrate, e.g., the Z axis,

is in the same direction as that of the other, and the X, Y axes of one substrate are orthogonal to the X, Y axes of the other,

the electric field means on one substrate being arranged to apply an electric field to its associated waveguide in one direction, e.g., horizontal, and the electric field means on the other substrate being arranged to apply an electric field to its associated waveguide in the orthogonal direction, e.g., vertical, so that the electrooptic effect of the electric fields on two orthogonal propagation modes in the waveguide assembly is substantially the same.

4,262,995

PLANAR STAR COUPLER DEVICE FOR FIBER OPTICS

Gregory L. Tangonan, Oxnard, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 5, 1979, Ser. No. 17,625

Int. Cl.³ G02B 5/14

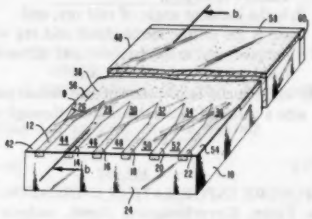
U.S. Cl. 350—96.16 **15 Claims**

1. An optical coupler comprising:

(a) a substrate of a chosen optical material having first and second major surfaces between which extend an input plane and an output reflective or transmissive plane;

(b) a plurality of spaced-apart optical channel waveguide sections adjacent said first major surface and each extending to said input plane;

(c) a plurality of tapered wave transition sections extending integral from said channel waveguide sections, respectively, and joined with each adjacent wave transition section at a common vertex in a multiple, side-by-side horn-like configuration;



(d) a wave mixing section integral at one end thereof with all of said wave transition sections and vertically coextensive therewith and extending to or near said output plane; and

(e) means adjacent said output plane for transmitting or reflecting light which is propagated thereto from said wave mixing section, whereby the tapered geometry of said wave transition sections enhances the optical coupling efficiency between said plurality of channel waveguide sections and said wave mixing section.

4,262,996

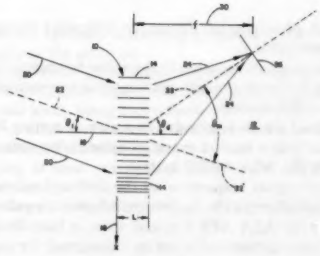
CHIRP-GRATING LENS FOR GUIDED-WAVE OPTICS

Shi-Kay Yao, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 29, 1979, Ser. No. 43,289

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.19 **5 Claims**



1. The combination comprising:

(a) A thin film optical waveguide; and

(b) Bragg diffraction grating means for modulating the effective mode index of refraction of said waveguide wherein said grating means acts as a lens,

(1) wherein said grating means comprises a plurality of grating elements disposed parallel to each other,

(2) wherein the spacing between said grating elements has a variable periodicity,

(3) wherein said variable periodicity conforms substantially to the relationship:

$$\Lambda(x)=m\lambda/2n \sin [\theta_m(x)/2]\cos\{[\theta_i-\theta_d(x)]/2\}$$

where

x is displacement along the longitudinal axis of said grating,

$\Lambda(x)$ is the periodicity,

m is a selected diffraction order of an output beam for said lens,

λ is the wavelength of light desired to be diffracted,

n is the effective refractive index of the guided wave mode,

$\theta_m(x)$ is the angle of deflection for a ray incident near the Bragg angle on said grating at x where $\theta_m(x)=\theta_i+\theta_d(x)$,

θ_i is the incident angle of said ray, and

$\theta_d(x)$ is the diffraction angle of said ray where $\theta_d(x)$ is proportional to arc tan (x/f) and where f is a selected focal length for said lens, and

(4) wherein the focal plane of said lens is positioned outside a through beam transmitted through said lens.

4,262,997

EXPOSURE INFORMATION INDICATING DEVICE

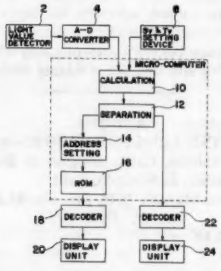
Yoshio Yuasa, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1979, Ser. No. 10,978

Claims priority, application Japan, Feb. 22, 1978, 53/20302

Int. Cl.³ G03B *17/18;* G01J *1/44*

U.S. Cl. 354—23 D **12 Claims**



1. A photographic device for indicating exposure information comprising:

first means responsive to the scene brightness for producing a first exposure information value represented in the ASA APEX system;

second means responsive to a manual setting for producing at least a second exposure information value represented in the ASA APEX system;

third means responsive to the first and second means for calculating a third exposure information value represented in the ASA APEX system from at least the first and second exposure information values, and for separating said third exposure information value into at least a figure composed of an integer component and a fraction component represented in the ASA APEX system;

fourth means having a plurality of addressed memories for storing a series of various values each corresponding to one of a series of various integer components for the figure of the third exposure information in a form to be indicated, respectively;

fifth means for designating one of the addressed memories of the fourth means in response to the integer component of the figure separated by the third means;

sixth means for indicating the value stored in the addressed memory which is designated by the fifth means; and

seventh means for indicating the fraction of the figure in accordance with the fraction component separated by the third means.

4,262,998

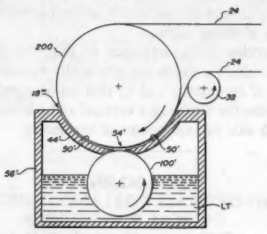
ELECTROPHOTOGRAPHIC ATTACHMENT FOR USE WITH AN OPTICAL PROJECTING SYSTEM

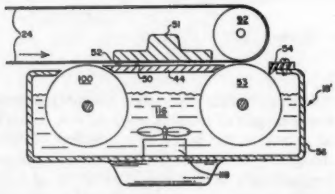
Manfred R. Kuehnle, Lexington, and George J. Perry, Sudbury, both of Mass., assignors to Coulter Systems Corporation, Beford, Mass.

Continuation-in-part of Ser. No. 802,573, Jun. 1, 1977, abandoned. This application Nov. 28, 1978, Ser. No. 964,207

Int. Cl.³ G03G *15/10*

U.S. Cl. 355—10 **33 Claims**





31. A method for reproducing an image onto a sheet of carrier material electrophotographically using an endless web mounted on rollers and having an electrophotographic portion including:

charging said electrophotographic portion;

locating and stopping said electrophotographic portion along a planar reach of the web;

exposing the electrophotographic portion to a light image at the planar reach; p1 forming a smooth uniform toning gap from said portion of the web as it passes through said toning station by placing a smooth conductive toning surface parallel to and spaced closely from said portion of the web;

applying a substantially constant amount of liquid toner across the width of only the bottom side of said electrophotographic portion in a toning station;

feeding said carrier material close to but spaced from said web;

moving said sheet of carrier material into close proximity with said electrophotographic portion as it passes through a transfer station; and

transferring an image from said electrophotographic portion to said carrier material thereat.

4,262,999
METHOD AND DEVICE FOR CLEANING PHOTOSENSITIVE SCREEN IN AN IMAGE FORMING APPARATUS

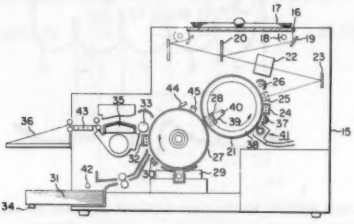
Tadashi Sato, Kokubunji, and Keiji Tanaka, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 549,437, Feb. 12, 1975, abandoned. This application Aug. 14, 1978, Ser. No. 933,530

Claims priority, application Japan, Feb. 25, 1974, 49-22149; Jul. 27, 1974, 49-86379

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **7 Claims**



1. A device for cleaning a photosensitive screen having a multitude of tiny openings for use in formation of an electrostatic latent image which is not subjected to a developer, wherein a corona discharging means is disposed in face-to-face relation with one side of said screen for forming the latent image on said screen, comprising in combination:

means disposed at said one side of said screen for rubbing said screen to loosen dust particles accumulated thereon during operation of said discharging means;

wall means for enclosing substantially all of said rubbing means; and

means to draw out of said wall means an atmosphere containing dust which has been loosened by said rubbing means.

4,263,000
METHOD OF, AND APPARATUS FOR PHOTOGRAPHICALLY MAKING POSITIVE PICTURES

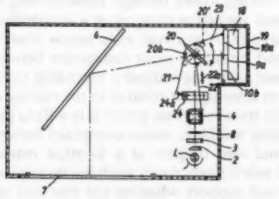
Otto Stemme, Munich; Peter Lermann, Narring; Volkmar Stenzenberger, Unterhaching; Werner Went, Leverkusen; Eberhard Herzig, Cologne, and Friedrich-Ludolph Hoesch, Leichlingen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Apr. 24, 1979, Ser. No. 32,901

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818616

Int. Cl.³ G03B *27/32, 27/52, 13/28*

U.S. Cl. 355—27 **4 Claims**



1. An apparatus for making positive photographic pictures from individual film frames of motion-picture films and the like, comprising a rear-projection film projector having an objective which is slidable along its optical axis, a rear-projection screen, and a series of deflecting mirrors at least one of which is interposed between said objective and the screen to direct a light beam from the objective onto the screen; means for holding self-developing film sheets to be exposed, said at least one mirror being pivotable between one position in which it directs the light beam onto said screen and another position in which it directs the light beam onto the film sheet to be exposed; shutter means for controlling the exposure duration time; means coupling said at least one mirror and said objective so that the objective slides along said optical axis in response to pivoting of said mirror to said other position, so as to compensate for size differentials between the screen size and the film sheet size; and means for developing a respective exposed film sheet.

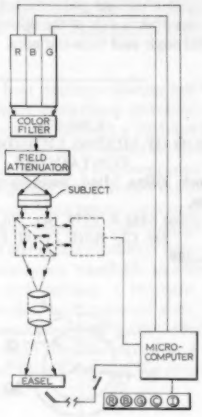
4,263,001
APPARATUS AND METHOD FOR ENHANCEMENT OF OPTICAL IMAGES

Jeffrey T. Deutsch, 5505 Constant Spring Terr., Lauderhill, Fla. 33311

Filed Sep. 18, 1978, Ser. No. 943,062

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—45 **8 Claims**



1. A method for optically modifying an optical image of the subject comprising the steps of:

(1) projecting the original subject optical image onto an array of controllable, light-transmitting cells, each of said cells in said array being individually controllable as to a plurality of different desired optical characteristics of the light transmitted therethrough;

(2) modifying at least one optical characteristic within at least one of said cells; and

(3) transmitting an image from said array of said light-transmitting cells.

4,263,002
DIFFERENTIAL DOPPLER TECHNIQUE FOR ON-AXIS BACKSCATTER MEASUREMENTS

Rajabushanan Sathyakumar, St. Paul, Minn., assignor to TSI Incorporated, St. Paul,, Minn.

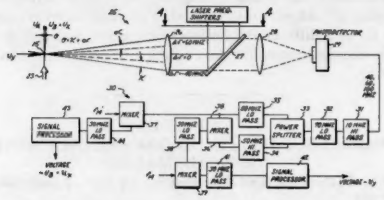
Filed Apr. 20, 1979, Ser. No. 31,956

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—349 **34 Claims**

1. A method of measuring the velocity component of flowing solid or fluid particles along the axis of an optical system comprising: generating a light beam, splitting the light beam into a plurality of separate light beams to provide at least two identifiable scattered light signals, directing the separate light beams to a crossing and focus area, moving particles through said crossing and focusing area whereby said particles produce scattered light, sensing the scattered light, converting the

sensed scattered light into two electric signals whose frequencies are proportional to two different vector components of the velocity at which the particles move through the focusing area of the separate light beams, mixing the electric signals to provide a frequency equal to the difference between the frequencies of said two electric signals, said difference frequency being proportional to the velocity component of the particles along the optical axis of the optical system, and converting the difference frequency to a voltage proportional to the velocity component along the optical axis of the optical system of the particles moving through said focusing area.



4,263,003

METHOD OF MIXING LIQUIDS IN CLOSED CONTAINERS

William D. Vork, Edina, Minn., assignor to Graco, Inc., Minneapolis, Minn.

Filed May 8, 1979, Ser. No. 37,225
Int. Cl.³ B01F *13/00, 3/00*
U.S. Cl. 366—348 **10 Claims**

1. A method of mixing liquid compositions in closed containers, comprising the steps of:

a. partially filling a container with a liquid composition, leaving an air volume therein;

b. moving the container about a closed path in a vertical plane at a cyclical rate; and

c. setting the cyclical rate so as to disperse the liquid composition into the air volume in said container.

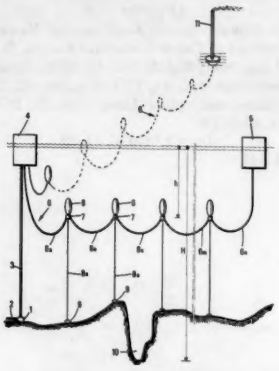
4,263,004

DEVICE FOR TRANSFERRING A FLUID THROUGH A LIQUID BODY BY MEANS OF A FLEXIBLE PIPE

Philippe Joubert, Les Loges en Josas; Michel Loupias, Clamart, and Pierre Durando, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Mar. 30, 1978, Ser. No. 891,628
Claims priority, application France, Apr. 4, 1977, 77 10345
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—172 **11 Claims**

1. A device for transferring a fluid through a liquid body, the device comprising a flexible pipe formed of a plurality of pipe sections, coupling means for interconnecting the pipe sections, buoyant elements for supporting said flexible pipe immersed in use, anchoring means for maintaining the buoyant elements submerged, at least some of said coupling means being directly connected to a buoyant element, and means for limiting stresses applied to the pipe sections adjacent to said coupling means.

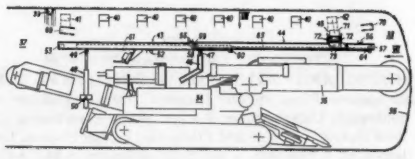


4,263,005

DEVICE FOR PROVISIONALLY CONSOLIDATING A GALLERY AND SUITABLE CONSOLIDATING FRAME

Siegfried Sigott; Otto R. Schetine; Alfred J. Zitz, all of Zeltweg, and Wilhelm F. Althaler, Vienna, all of Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke - Alphine Montan Aktiengesellschaft, Vienna, Austria

Filed Oct. 13, 1978, Ser. No. 951,255
Claims priority, application Austria, Oct. 13, 1977, 7327/77; Jun. 9, 1978, 4212/78
Int. Cl.³ E21D *13/04, 15/02*
U.S. Cl. 405—303 **15 Claims**



1. In combination with a cutting machine having at its forward end a universally pivotable arm extending forwardly, said arm carrying at its forward end a rotary cutting head: apparatus for temporarily consolidating a gallery or drift or tunnel with consolidating frames which can be reduced in size so as to be transportable through consolidating frames already in place, said apparatus comprising a longitudinally extending support have front and rear ends means fixed to the cutting machine and forming a pivot connection between the cutting machine and said longitudinally extending support such that said support is swingable relative to the cutting machine about a horizontal transverse axis which is in a fixed position relative to the cutting machine; means connected between the cutting machine and said support at a location rearwardly of said horizontal axis for selectively applying upward and downward forces to said support whereby the rear end of said support may be moved away from and toward the cutting machine; feed carrier means mounted on said support for telescopic movement parallel thereto such that the forward end of said feed carrier means may be extended longitudinally beyond the front end of said support to a position overlying the universally pivotable arm of the cutting machine; a frame transport car longitudinally movable on said feed carrier means for supporting and moving a consolidating frame, when reduced in size,

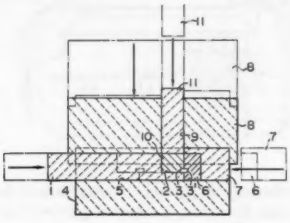
from a location near the rear end of said support to a location forward of the front end of said feed carrier means; and drive means for moving said feed carrier means parallel to said support and for moving said transport car longitudinally of said feed carrier means.

4,263,006

METHOD FOR MANUFACTURING A DIAMOND TOOL

Eiichi Shinozaki, Chofu, Japan, assignor to Fuji Dia Co., Ltd., Tokyo, Japan

Division of Ser. No. 887,712, Mar. 17, 1978, Pat. No. 4,205,425.
This application Jan. 21, 1980, Ser. No. 113,753
Int. Cl.[3] B30B *11/02*
U.S. Cl. 425—78 **23 Claims**



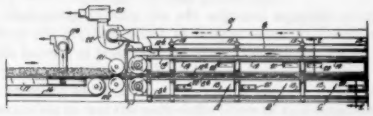
1. A device for manufacturing a diamond tool having a shank which comprises an upper die and a lower die, said upper die having a hole, a press rod slidably disposed within said hole, said lower die having a U-shaped channel, a base body disposed in said U-shaped channel, said base body containing a diamond chip extending therefrom, an insert member containing a clayish fixture also disposed in said U-shaped channel, means for pushing the base body and the insert member together so that the diamond chip extends into said clayish, fixture portion, means for drying and curing the clayish fixture to secure the cutting edge of the diamond chip in said fixture, means for processing the upper die against the lower die, means for introducing an amount of powder metal into the hole in the upper die, means for moving the press rod to compress the powder metal, means for sintering the powder metal against said base body to rigidly secure the diamond chip to said base body, and means for removing the base body from the die.

4,263,007

APPARATUS FOR HEAT TREATMENT OF FIBROUS MATS

Jean A. Battigelli, and Francois Bouquet, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 5, 1978, Ser. No. 912,482
Int. Cl.[3] B29J *5/10*
U.S. Cl. 425—371 **9 Claims**



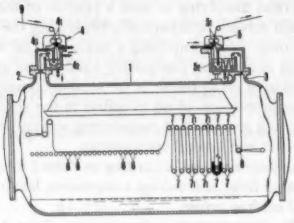
1. Apparatus for heat treating a fibrous mat carrying a heat hardenable fiber binder comprising conveyor mechanism for advancing the fibrous mat through a feed and treatment path, a pair of gas circulation boxes arranged at opposite sides of the mat in said path and defining a treatment zone in which gas is passed through the fibrous mat between the circulation boxes, gas supply and exhaust ducts respectively connected with said circulation boxes and providing for passage of heated gas through the fibrous mat in said treatment zone, a pair of supply and exhaust gas circulation manifolds positioned within said circulation boxes and defining a localized treatment area within and smaller than said treatment zone, and heated gas circulating means associated with said manifolds and circulating heated gas through the fibrous mat at a pressure higher than that of the gas passed through the fibrous mat between said circulation boxes.

4,263,008

METHOD AND APPARATUS FOR CONTINUOUSLY CARRYING OUT WEIGHT REDUCTION AND MERCERIZATION OF CLOTH MATERIAL

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Oct. 18, 1978, Ser. No. 952,403
Claims priority, application Japan, Oct. 31, 1977, 52-130568
Int. Cl.[3] D06M *9/00*
U.S. Cl. 8—115.7 1 Claim



1. A method of continuously carrying out successive weight reducing and mercerizing treatments on a cloth material comprised of a mixture of cotton and man-made fibers comprising the steps of feeding the cloth material into and through a high pressure steamer from an inlet to an outlet, impregnating the cloth material with a caustic alkali solution as it enters the steamer at the inlet, applying humid heat at a temperature above 100° C. to the cloth material as it moves through the steamer, after impregnating the cloth material transferring the cloth material in a tension-free condition within the steamer from adjacent the inlet to a location intermediate the inlet and outlet and spaced from the outlet and thereby reducing the weight of the cloth material, immediately after completing the weight reducing step moving the cloth under tension over a zig-zag arrangement of rolls member and arranging at least one friction roll member rotating at a higher speed than the other roll members in the steamer and frictionally contacting the cloth material with the friction roll member and thereby mercerizing the cloth material and improving its luster, and after the completion of the mercerizing step moving the cloth material to the outlet.

4,263,009

METHOD FOR IMPROVING THE DYEING CHARACTERISTICS OF TEXTILE MATERIALS CONTAINING POLYOLEFIN FIBERS AND PRODUCTS PRODUCED THEREBY

Ralph N. Brendle; John W. Miley, and George A. Allen, all of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 873,994, Jan. 31, 1978, abandoned, which is a division of Ser. No. 770,878, Feb. 22, 1977, abandoned.
This application Sep. 4, 1979, Ser. No. 71,927
Int. Cl.[3] D06P *3/79;* D06M *13/46*
U.S. Cl. 8—495 17 Claims

1. A method for improving the dyeing characteristics of textile materials containing polyolefin fibers by surface modification of such textile materials which comprises:

(a) forming an aqueous admixture consisting essentially of from about 1 to about 36 weight percent of a film forming component containing at least one quaternary ammonium group per molecule, from about 2 to about 10 percent of a wetting agent and from about 0.01 to about 0.5 weight percent of a fluorocarbon surfactant;

(b) adjusting the pH of the aqueous admixture with an effective amount of pH adjusting agent to provide a pH range for said aqueous admixture of from about 2.0 to about 6.0;

(c) applying said aqueous admixture to said textile materials to wet the polyolefin fibers of said materials; and

(d) heating the wetted textile materials to a temperature effective to remove water and allow formation of coherent film on said polyolefin fibers.

8. A method for improving the dyeing characteristics of textile materials containing polyolefin fibers which comprises:

(a) forming an aqueous admixture consisting essentially of from about 1 to about 36 weight percent of a film forming polyamine having at least one quaternary ammonium group and at least two amino groups having active hydrogen per molecule, from about 2 to about 10 percent of a wetting agent and from about 0.01 to about 0.5 weight percent of a fluorocarbon surfactant;

(b) adjusting the pH of the aqueous admixture with an effective amount of a volatile organic acid to provide a pH range for acid aqueous admixture of from about 2.0 to about 6.0 and to further neutralize the amino groups having active hydrogen of said polyamine;

(c) incorporating into the pH adjusted aqueous admixture from about 0.5 to about 16 weight percent of a polyepoxide having at least two 1,2-epoxy groups per molecule to form a resulting aqueous admixture;

(d) applying said resulting aqueous admixture to said textile materials to wet the polyolefin fibers of said materials; and

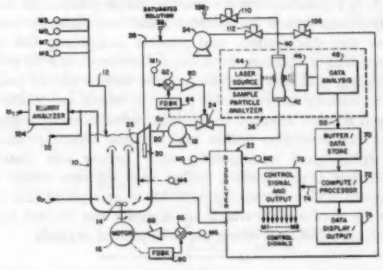
(e) heating the wetted textile materials to a temperature effective to remove water and volatile organic acids regenerated by such heating and thus free the amino groups of said compound for reaction with said polyepoxide to provide a film forming reaction product as a coherent film on said fibers.

4,263,010

CONTROL METHOD AND APPARATUS FOR CRYSTALLIZER PROCESS CONTROL

Alan D. Randolph, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Filed Oct. 31, 1979, Ser. No. 90,019
Int. Cl.[3] G01N *15/02;* B01D *9/00*
U.S. Cl. 23—230 A 19 Claims



11. A method for controlling the dynamic operating parameters of a crystallizer having a crystallizer tank containing a body of slurry including crystal particles and liquid, the crystallizer also including a crystal product removal arrangement of crystal product having an average product size said method comprising:

obtaining a conditioned sample stream of crystalline particle population in a predetermined range of particle sizes from said crystallizer tank smaller than a predetermined fraction of the average product size;

analyzing said sample stream to obtain particle distribution data of said sample stream;

calculating at least one dynamic process parameter of said crystallizer based on size ranges of particles in said particle distribution data unaffected by the conditioning of the sample stream and representing particle size ranges having at least a predetermined minimum volume fraction of the conditioned sample stream particles;

developing a command signal representing a predetermined manipulated process variable of said crystallizer having a predetermined relationship to and effect on said dynamic process parameter; and

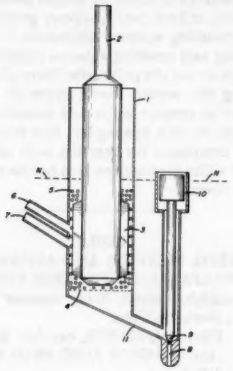
controlling said predetermined manipulated process variable of said crystallizer in accordance with said command signal to maintain said dynamic process parameter within a predetermined operational process range during continuous operation of said crystallizer.

4,263,011

CRYSTALLIZATION PROCESS

Albert P. Huguenard, Le Plessis Trevise, and Michel J. Favre, Chantilly, both of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1977, Ser. No. 857,733
Claims priority, application France, Dec. 9, 1976, 76 37070
Int. Cl.[3] B01D *9/02*
U.S. Cl. 23—300 **16 Claims**



1. A crystallization process for the preparation of fine crystals characterized by morphological homogeneity and a narrow size distribution, said process comprising the steps of providing a solution of a crystallizable solute in a solvent, bringing said solution into contact with a bed of small inert continuously moving solid particles which are maintained in rapid motion adapted to promote conditions of temperature and concentration within said solution which promote said morphological homogeneity and narrow size distribution, initiating crystallization within said solution while it is in contact with said moving particles to precipitate said solute in the form of cystals which are separate and distinct from said particles, and recovering the precipitated crystals.

4,263,012

METHOD OF GRANULATION OF SULFUR

Halina Leszczynska, Warsaw; Michal Gulcz, Gdansk-Wrzeszcz; Zdzislaw Januszewski, Gdansk-Wrzeszcz; Czeslaw Godlewski, Gdansk-Wrzeszcz; Zdzislaw Gorczyca, and Norbert Janota, both of Katowice, all of Poland, assignors to Instytut Przemyslu Organicznego, Warsaw, Poland

Filed Nov. 6, 1979, Ser. No. 91,776
Claims priority, application Poland, Dec. 1, 1978, 211429
Int. Cl.[3] C01B *17/02*
U.S. Cl. 23—313 FB **3 Claims**

1. A method of granulation of sulfur, consisting in the solidification of liquid sulfur in a counter-current stream of air in a column, characterized in that liquid sulfur is introduced into a vertical air stream having the linear velocity increasing downwards, from a velocity lower than the critical velocity of sulfur dust in the sprinkling zone to a velocity higher than the critical velocity of the formed granule in the zone of intensive cooling.

4,263,013

COAL CLEANING

George A. Smith, Sr., Philadelphia, Pa., assignor to Fluid Coal Corporation, Wilmington, Del.

Filed Aug. 9, 1979, Ser. No. 65,290
Int. Cl.[3] C10L *9/00*
U.S. Cl. 44—1 B **11 Claims**

1. In a process for cleaning coal in which oil is used as a cleaning medium and in which solid refuse is produced, the refuse carrying with it a quantity of oil: the improvement comprising the steps of admixing a volatile solvent with the solid refuse; dissolving at least a portion of the refuse-carried oil in said solvent; mechanically separating the admixture into a first component comprising a mixture of oil and solvent and a second component comprising solid refuse and solvent, the proportion of oil to refuse in the second component being less than the proportion of oil to refuse in the refuse produced in the cleaning process; and evaporating solvent from at least one of said first and second components.

6. The improvement according to claim 1 in which solvent is evaporated from said second component, leaving substantially dry and oil-free refuse.

7. The improvement according to claim 1 in which the process for cleaning coal includes the step of deriving a mixture of coal particles in oil for use as a fuel, and in which solvent is evaporated from said first component, and the oil remaining after the evaporation of solvent from said first component is added to said mixture of coal particles in oil.

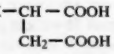
4,263,014

ANTI-RUST FUEL COMPOSITION

Marshall E. Davis, Poughkeepsie, and Kenneth L. Dille, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,542
Int. Cl.[3] C10L *1/14;* C10M *1/40;* C07C *3/00*
U.S. Cl. 44—63 **4 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing from about 0.000003 to 0.0003 to weight percent of a polymeric acid comprising a dimer or trimer of a dienoic or trienoic acid containing from 16 to 18 carbon atoms and from about 0.001 to 0.02 weight percent of a hydrocarbon-substituted lactono-imidazoline reaction product, said reaction product being obtained by reacting diethylenetriamine with a lactone reaction product under amidation conditions at a temperature in the range of 80° C. to 170° C. employing about one to two moles of said amine per mole of said lactone reaction product, said lactone reaction product being obtained by treating a hydrocarbon succinic acid, represented by the formula:



in which X is a hydrocarbon radical having an average molecular weight ranging from about 300 to 1500, under substantially anhydrous esterification conditions at a temperature ranging from about 50° to 100° C. in the presence of a protonating agent.

4,263,015
RUST INHIBITOR AND OIL COMPOSITION CONTAINING SAME

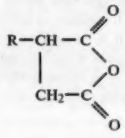
Rodney L. Sung, Fishkill; Jerzy J. Bialy; Peter Dorn, both of Lagrangeville; William P. Cullen, Fishkill, all of N.Y., and John W. Nebzydoski, Miami, Fla., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 753,962, Dec. 23, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 940,928

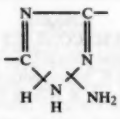
Int. Cl.³ C10L *1/22*; C07D *249/14*

U.S. Cl. 44—63 **15 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing a minor rust inhibiting amount of the reaction product of a hydrocarbylsuccinic anhydride and an aminotriazole, said reaction product being obtained by reacting from 0.75 to 1.5 moles of said aminotriazole per mole of said hydrocarbylsuccinic anhydride at a temperature in the range from about 20° to 150° C., said hydrocarbyl succinic anhydride being represented by the formula:



in which R is a monovalent aliphatic hydrocarbon radical having from about 6 to 30 carbon atoms and said amino triazole is represented by the formula:



4,263,016
NON-TOXIC, ACTIVE FILLER FOR GRINDING DISKS, ITS USE AND GRINDING DISK CONTAINING SAME

Rudolf Hirschberg, and Bernd Schönfeld, both of Bad Nenndorf, Fed. Rep. of Germany, assignors to Riedel-de Haen Aktiengesellschaft, Seelze, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 66,235

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1978, 2835543

Int. Cl.³ C09C *1/02*

U.S. Cl. 51—309 **9 Claims**

1. Non-toxic, active filler for grinding disks consisting essentially of an alkali metal chloroferrate (II, III) of the formula I

$$A_xFe_y^{++}Fe_z^{+++}Cl_{x+2y+z} \quad (I)$$

in which A means an alkali metal ion or an ammonium ion, x is a number from 1 to 10, y is a number from zero to 1, z is a number from zero to 1, with proviso that y and z cannot be zero at the same time.

4,263,017
PERMEABLE MEMBRANE ASSEMBLY

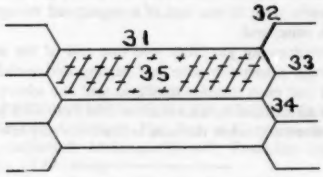
William S. Karn, 518 Dickson Ave., Pittsburgh, Pa. 15202

Filed Jan. 30, 1980, Ser. No. 116,938

Int. Cl.³ B01D *53/22*, *31/00*

U.S. Cl. 55—16 **11 Claims**

6. An assembly of two membrane composites excluding ion permeable membrane composites, each of said composites comprising a membrane central region and a membrane border region, each of said composites having an integral margin frame border region completely bordering the central region of said membrane composite, said integral margin frame border region having flow port connectors giving fluid access to faces of said membranes, said flow port connectors being joined to and passing thru said border region, said border region of one membrane composite being joined to the border region of a second membrane composite so as to form a closed pouch with openings only via said flow port connectors, said pouch being spiral wound about itself wherein the improvement comprises that said border region is a film material, that said border region is sealed to said flow port connectors, and that said border region is sealed to said second membrane composite



border region completely around the periphery of said membrane composites.

10. The process of separating hydrogen from a mixed gas stream said process comprising the step of constructing an assembly of two membrane composites as defined in claim **6** and the step of passing said mixed gas stream across a face of said membrane central region and the step of removing a gas stream from the back side of the membrane surface opposite said face of said membrane central region whereby said gas stream being removed is enriched in hydrogen due to difference of gas permeability rates thru said membrane.

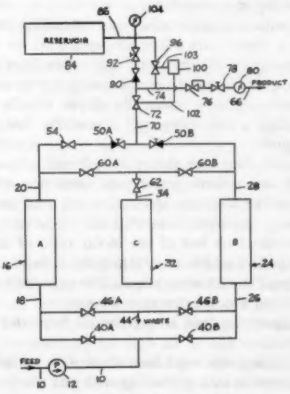
4,263,018
PRESSURE SWING ADSORPTION PROCESS AND SYSTEM FOR GAS SEPARATION

Norman R. McCombs, Tonawanda, and Edward E. Vrana, West Seneca, both of N.Y., assignors to Greene & Kellogg, Tonawanda, N.Y.

Continuation of Ser. No. 874,167, Feb. 1, 1978, Pat. No. 4,194,890, which is a continuation of Ser. No. 745,285, Nov. 26, 1976, abandoned. This application Aug. 3, 1979, Ser. No. 63,628

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—18 **19 Claims**



1. In a pressure swing process for fractionating at least one component from a gaseous mixture by selective adsorption in each of at least two adsorption zones by sequentially passing

the gaseous mixture from a feed stream through a first adsorption zone until the zone is about saturated while simultaneously purging and then pressurizing a second adsorption zone and then passing the gaseous mixture from the feed stream through the second adsorption zone until the zone is about saturated while simultaneously purging and then pressurizing the first adsorption zone, the improvement comprising:

(a) withdrawing low purity gas from one of the adsorption zones in a direction cocurrent with feed flow when the zone is at the end of the adsorption operation therein and prior to purging of the zone until the mass transfer zone moves out of said adsorption zone;

(b) introducing the withdrawn low purity gas and said mass transfer zone to one end of a segregated storage adsorption zone; and

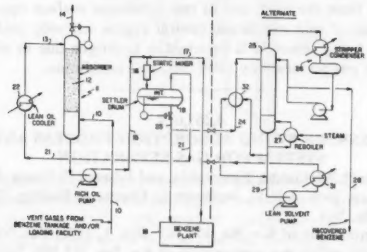
(c) withdrawing gas from said one end of the segregated storage adsorption zone and passing said withdrawn gas and said mass transfer zone into said one adsorption zone in a direction countercurrent to feed flow after purging of the zone and when the zone is at a relatively low pressure.

4,263,019

VAPOR RECOVERY

Ari A. Minkkinen, Versailles, France, assignor to The Lummus Company, Bloomfield, N.J.

Filed Oct. 19, 1979, Ser. No. 86,456
Int. Cl.[3] B01D *11/04, 53/14*
U.S. Cl. 55—37 **15 Claims**



1. A process for the recovery of a volatile liquid present as a vapor in a blanket gas released from a storage zone for the volatile liquid, comprising:

(a) contacting said blanket gas containing the volatile liquid as a vapor with a lean absorption oil for said vapor, said absorption oil absorbing said vapor from said gas to provide a rich absorption oil containing an absorbed component consisting essentially of the volatile liquid and providing a remaining gas essentially free of the volatile liquid;

(b) contacting rich absorption oil with an extraction solvent for said volatile liquid, said extraction solvent being immiscible with the absorption oil, said extraction solvent being employed in a molar ratio to volatile liquid which is one-third or less of the molar ratio of absorption oil to volatile liquid in step (a) and extracting said volatile liquid from the rich absorption oil to provide a lean absorption oil and a rich extraction solvent;

(c) separating lean absorption oil from rich extraction solvent;

(d) passing separated lean absorption oil without stripping thereof to said contacting with said blanket gas in step (a);

(e) recovering said volatile liquid from the rich extraction solvent to provide a lean extraction solvent; and

(f) passing lean extraction solvent to said contacting with the rich absorption oil in step (b).

4,263,020

REMOVAL OF SULFUR FROM PROCESS STREAMS

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 2, 1980, Ser. No. 109,159
Int. Cl.[3] B01D *53/04*
U.S. Cl. 55—62 **13 Claims**

1. A process for the removal of sulfur from a sulfur containing process stream which comprises

contacting said stream with a metal alumina spinel sorbent characterized by the formula

$$M\,Al_2O_4$$

wherein M is chromium, iron, cobalt, nickel, copper, cadmium, mercury, or zinc to adsorb sulfur thereon.

8. In a process for the removal of sulfur from a sulfur containing process stream wherein a series of on-stream reactors are provided with beds of a sulfur sensitive platinum-containing catalyst, a naphtha feed with hydrogen is cocurrently passed sequentially through said series of reactors, and a vaporous effluent rich in hydrogen is taken from the last reactor of the series, hydrogen is separated from the products and recycled, the improvement which comprises

contacting said hydrogen recycle stream, prior to its recycle, with a metal alumina spinel sorbent characterized by the formula

$$M\,Al_2O_4$$

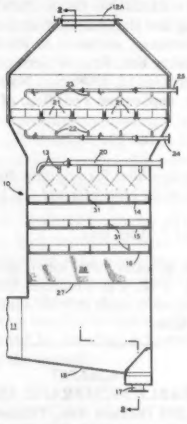
wherein M is chromium, iron, cobalt, nickel, copper, cadmium, mercury, or zinc to adsorb sulfur thereon.

4,263,021

GAS-LIQUID CONTACT SYSTEM

William Downs, Alliance; Edward A. Pirsh, Akron; Jack F. Stewart, and Stephen S. Strom, both of Alliance, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 312,424, Dec. 5, 1972, abandoned. This application Oct. 30, 1975, Ser. No. 627,426
Int. Cl.[3] B01D *47/02*
U.S. Cl. 55—73 **6 Claims**



1. A gas-liquid contact device comprising walls defining an upright housing with a gas inlet and having means for passing gas upwardly therethrough one or more horizontally disposed perforated plates extending across the housing, the one or more perforated plates being vertically spaced in the housing in location upward from the gas inlet, each of the one or more perforated plates being perforated with substantially symmetri-

cally spaced relatively large openings to form an open area through each of the one or more plates equivalent to approximately 25–50% of the cross sectional area of the housing, a plurality of upright partitions mounted on each of the one or more perforated plates, at least one of the partitions on each of the one or more perforated plates being mounted substantially perpendicular to the other partitions on the one or more perforated plates to form a plurality of open-topped compartments, the height of the partitions being substantially equal and terminating intermediate the spacing above each of the one or more perforated plates, nozzle means positioned interior to the housing above the uppermost of the one or more perforated plates and symmetrically arranged with respect to the one or more perforated plates so as to deposit substantially equal quantities of liquid slurry or liquid solution in the compartments of the uppermost of the one or more perforated plates and at least one or more gas outlet means positioned above the nozzle means for discharge of said gas from the housing.

6. In a counter-current liquid gas contact device having one or more vertically spaced perforated plates extending horizontally across the flow path of an upwardly rising stream of SO_2 containing gas, each of the one or more perforated plates having approximately 25–50% open area and being divided into a plurality of open topped compartments, the method of operation which comprises passing the gas upwardly to the plates at a rate of 5 to 20 feet per second, introducing a spray of chemically reactive liquid slurry or liquid solution with about 5–10% suspension containing calcium compounds to the uppermost of said one or more plates for downward movement therethrough in counter-current contact with the gas, the chemically reactive liquid slurry or solution being introduced at a rate of approximately 20 gallons per square foot of plate area per minute.

4,263,022
ELECTROSTATIC PRECIPITATOR WITH RAPPERS FOR THE CORONA ELECTRODES

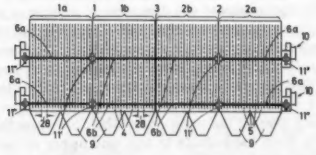
Joachim Brandt, Vahlberg, and Werner Kantelhardt, Olpe, both of Fed. Rep. of Germany, assignors to Apparatebau Rothemühle Brandt & Kritzler, Wenden-Rothemühle, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,297

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839542

Int. Cl.³ B03C 3/76

U.S. Cl. 55—112 **8 Claims**



1. In an electrostatic precipitator assembly comprising at least one housing, a plurality of spaced apart collector electrodes in said housing defining gas passages between them and connected to one side of a high voltage source, corona discharge electrodes disposed in said gas passages in said housing and connected to another side of said high voltage source, the collector and discharge electrodes forming a plurality of separate fields which require electrical insulation from one another, and rotary rappers in said housing respectively positioned for rapping electrodes of said fields, the improvement which comprises:

a respective shaft for each of said rappers, said shafts having ends turned toward one another and spaced apart from one another;

an electrically insulating coupling interconnecting said ends of said shafts for joint rotation while electrically insulating them from one another; and

a common drive connected to one of said shafts remote from the said end thereof for rotating both said shafts, said coupling comprising a disk-shaped electrical insulator body lying in a plane perpendicular to the axis of said shafts, and respective connecting flanges at said ends of said shafts individually connected to said body, said body having a circular configuration with a diameter greater than the distance between the ends of the shafts and greater than the diameters of said connecting flanges.

4,263,023
MULTIZONE ELECTROSTATIC PRECIPITATOR

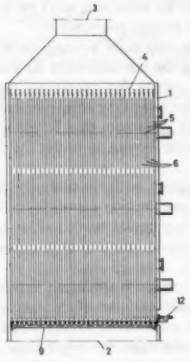
Heinz Schminke, Egelsbach, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 112,819

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1979, 2904339

Int. Cl.³ B03C 3/76

U.S. Cl. 55—112 **7 Claims**



1. A multizone vertical-flow electrostatic precipitator, particularly for use in applications with fluctuating gas flow rates, comprising:

a vertically-elongated upright housing formed with an inlet for a dust-entraining gas at its bottom and an outlet for gas freed from dust at its top;

a multiplicity of sets of discharge electrodes spaced one above another in said housing, each of said sets comprising a plurality of tensioning frames spanned by respective corona-discharge electrodes, each set of tensioning frames defining a respective electrostatic precipitator zone, said zones being traversed in succession by the dust-entraining gas;

a single array of collecting electrodes in said housing disposed such that the collecting electrodes are located between pairs of tensioning frames of each set, each of said collecting electrodes consisting of plate strips extending vertically continuously through all of said zones and entirely smooth in the direction of gas flow substantially over their entire lengths and having a constant shape in cross section; and

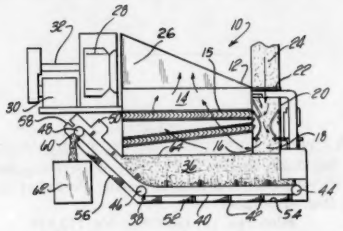
means for electrically mounting said sets of frames in said housing for electrically separating the frames of each set from the frames of the other set.

4,263,024

AIR CLEANING DEVICE

Edward L. Vander Velden, Grand Blanc, and Gerald D. Erdman, Chesaning, both of Mich., assignors to Venturmation, Inc., Grand Blanc, Mich.

Filed Oct. 10, 1979, Ser. No. 83,288
Int. Cl.[3] B01D 47/00; B03C 3/00
U.S. Cl. 55—122 7 Claims



1. An apparatus for removing solid particulate matter from a contaminated air stream comprising:

a main housing, said main housing having an air inlet means for receiving the contaminated air stream;

wash section means for receiving the contaminated air stream and for removing solid particulate matter from the contaminated air stream thus forming a clean air stream;

said main housing having an outlet for exhausting the clean air stream;

means for inducting air from said inlet and to said outlet;

wherein said wash section means further comprises:

a tubular and rectangular wash section housing open at one end to the housing inlet and at its other end to the housing outlet;

means for dispersing a wash liquid into the contaminated air stream near said one end of the housing;

a pair of baffles, each baffle having a convex surface with an upper and lower edge, the upper edge of each baffle being secured to facing walls of the wash section housing downstream from the wash liquid dispersing means so that the convex surfaces face each other and form a venturi therebetween;

means for adjustably securing the lower edge of at least one baffle to its respective wash section housing wall between an extended position in which the lower edge of said at least one baffle is spaced outwardly from its respective housing wall and a retracted position in which the lower edge of said at least one baffle is closely adjacent its respective housing wall and

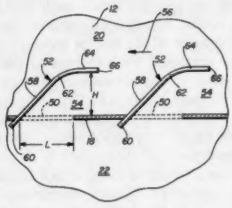
wherein said dispersing means further comprises a generally rectangular distributor plate having one longitudinal edge secured to said wash section housing above one of said baffles, said distributor plate extending downwardly toward said venturi, said dispersing means further comprising a Y-shaped conduit having a base leg and two diverging legs and an opening in each diverging leg, said conduit positioned in said wash section housing so that said openings in said diverging legs are disposed above said distributor plate and longitudinally spaced from each other along the distributor plate, and means pumping said wash liquid into said conduit base leg and out through said openings whereby a planar sheet of wash liquid exits from the other longitudinal edge of the distributor plate.

4,263,025

BAFFLE PLATE FOR CYCLONE STEAM SEPARATOR

William L. Godare, Shreveport, La., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Apr. 20, 1979, Ser. No. 31,722
Int. Cl.[3] B01D 19/00
U.S. Cl. 55—185 5 Claims



1. In a cyclone type steam separator having a separator vessel presenting a substantially cylindrical inside surface, an inlet for directing incoming fluid containing a mixture of steam and water into the vessel in a manner to effect swirling motion of the fluid around said surface, a water chamber in the lower portion of the vessel for receiving water which impacts against said surface and drains downwardly, a water outlet for discharging water from said water chamber, a steam chamber in the upper portion of the vessel for receiving steam which rises above the water, and a vertical steam outlet conduit extending from the lower portion of the vessel into the steam chamber and having a steam inlet at its upper end for discharging steam from the steam chamber, the improvement comprising:

a generally horizontal baffle plate mounted in the separator vessel at a location to form a partition which separates the water and steam chambers from one another, said baffle plate having a central opening receiving the steam outlet conduit and being located below the inlet such that incoming fluid is directed into the steam chamber;

a plurality of openings arcuately spaced about the outer portion of said baffle plate and being of sufficient size to pass the swirling fluid downwardly through the baffle plate into the water chamber; and

a plurality of scoop elements on said baffle plate associated with the respective openings, said scoop elements projecting above the baffle plate over the respective openings with an open end of each scoop element facing substantially in opposition to the direction of motion of the swirling fluid to thereby receive and direct the swirling fluid through the corresponding opening into the water chamber, each of said scoop elements having an upper portion extending generally upwardly from said baffle plate at one end of the corresponding opening, each upper portion inclining toward the open end of the corresponding scoop element from the bottom to top, said upper portion terminating at an edge defining the top of said open end of the scoop element, said edge being located laterally beyond the associated opening of the baffle plate.

4,263,026

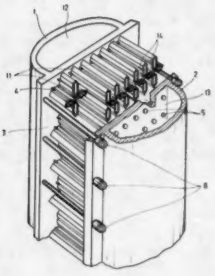
GAS MIXTURE SEPARATION APPARATUS

Gerd Tybus, Poing, and Hartmut Neuking, Munich, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschraankter Haftung, Munich, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,672
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820738
Int. Cl.[3] B01D 45/04, 57/00
U.S. Cl. 55—344 9 Claims

1. Apparatus for the separation of the components of different molecular weights in a gas mixture by means of mutual

deflection of jets of the gas mixture directed toward one another, comprising a first tubular member and a second tubular member being disposed in laterally spaced relation, each said first and second tubular member having a flow axis with the flow axes extending in generally parallel relation, each said first and second tubular members having an axially extending planar surface with said planar surfaces facing one another in spaced apart relation, said first tubular member forming a gas supply chamber and said second tubular member forming a gas discharge chamber, a plurality of elongated sections extending between said planar surfaces of said first and second tubular members, each said section having an inner surface, an outer surface, a pair of spaced edges extending along the inner and outer surfaces in the elongated direction of said sections between said planar surfaces of said first and second tubular members, and a first end and a second end each extending transversely of the elongated direction of said sections with the first end abutting against said planar surface of said first tubular member and the second end abutting against said planar surface of said second tubular member, a pair of said sections arranged in opposed relation with the inner surfaces thereof facing one another and forming a flow passage therebetween extending in the elongated direction of said sections between said planar surfaces of said first and second tubular members, at



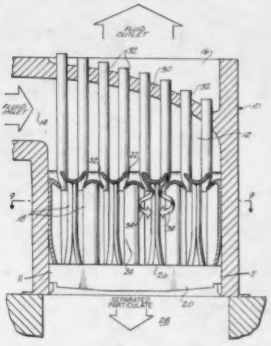
least one pair of adjacent edges of each said pair of sections disposed in closely spaced relation and forming a nozzle therebetween communicating with the flow passage formed within said pair, four said pairs of sections arranged to form a star-shaped member with the inner and outer surfaces of two of said pairs extending transversely of the inner and outer surfaces of the other two of said pairs and said four said pairs having a central junction line extending between said planar surfaces of said first and second tubular member with each said pair of sections forming said star-shaped member extending outwardly from the junction line and being spaced angularly apart from the adjacent said pairs by approximately 90°, each said pair of sections in said star-shaped member having a pair of edges located at and extending along the junction line of the four said pairs of said sections with the nozzles formed by each said pair at the junction line facing the nozzle on the other said pair spaced 180° therefrom, the nozzles at the junction line of said star-shaped member bounding a separation space for the gas mixture and the outer surfaces of said sections in each said pair of sections forming said star-shaped member defining one surface of an outer guide duct, and in each said star-shaped member the flow passageways of two said pairs spaced 180° apart are connected to said gas supply chamber and the other two said pairs spaced 180° apart are connected to said gas discharge chamber.

4,263,027

MULTI-VORTICAL SEPARATOR

Joseph Varnas, 286 N. Allen Ave., Pasadena, Calif. 91106, and Horst W. Schneider, 900 S. 6th Ave. #19, Hacienda Heights, Calif. 91745

Filed Mar. 12, 1979, Ser. No. 19,831
Int. Cl.³ B01D *45/16*
U.S. Cl. 55—346 **75 Claims**



1. Apparatus for centrifugally separating particulate matter suspended in a fluid and for collecting the separated matter at a point of collection comprising:

a chamber having an inlet and an outlet;

means for introducing the fluid into the chamber through the inlet;

a plurality of spaced apart, elongated contoured columnar baffles within the chamber, the baffles each having approximately the same cross-section, each cross-section having a major axis, the baffles being arranged such that the major axes of adjacent baffles are at substantially right angles to each other, forming an elongated region extending between said baffles and having a length extending generally along the length of the baffles;

means for introducing fluid in the chamber into an end of said region so that the fluid flows generally along the length of said region, said baffles being shaped for causing the fluid to rotate vortically about a vortex axis as it flows along said region;

means for guiding fluid from said region to the outlet; and

means for guiding separated particulate matter to the point of collection.

4,263,028

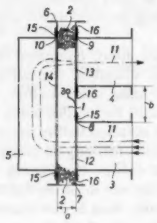
FILTER SYSTEM FOR PURIFYING GAS OR AIR STREAMS

Manfred Ohlmeyer, Eggenstein-Leopoldshafen, and Jürgen Wilhelm, Linkenheim-Hochstetten, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 720,828, Sep. 7, 1976, abandoned. This application Jan. 18, 1979, Ser. No. 4,589
Int. Cl.³ B01D *53/06, 46/32*
U.S. Cl. 55—390 **7 Claims**

1. A filter system for purifying a gas stream by means of flowable or tricklable contact filter material, wherein the stream flows through the filter material and the filter material forms a movable filter bed, comprising a filter chamber through which the filter material can flow and which is provided with an inlet opening and an outlet opening for the filter material between which the filter material is conveyed continuously by means of gravity, the improvement wherein the filter system includes a sole deflection housing having a deflection chamber for deflecting the stream, after a first transverse passage of the stream through the filter bed to charge the filter

bed for a first time, to a position above where the stream first passed through the filter bed and for conducting the stream only once again transversely through the filter bed above the first charge so that said filter bed is charged a second time; said filter chamber containing a first opening where the stream enters the filter bed for the first time and aligned with the deflection chamber, and a second opening aligned with the deflection chamber and above the first opening, the second opening being where the stream leaves the filter bed for the second time, with a partial quantity of the gas stream being able to pass directly through the filter bed from the first opening to the second opening without going through the deflection chamber; the distance between the upper edge of the first opening and the lower edge of the second opening being so related to the thickness of said filter chamber that, independent of the flow rate of the gas stream, the partial quantity of the stream which passes directly through the filter bed from the first opening to the second opening without going through the deflection chamber has at least the same period of dwell in the filter bed as does the stream which passes through the deflection chamber; an inlet housing on one side of the filter chamber and having an inlet chamber for the gas stream, the inlet chamber being aligned with the first opening for directing the gas stream into the first opening; an outlet housing likewise on said one side of the filter chamber and having an outlet chamber for the gas stream, the outlet chamber being aligned with the second opening for receiving the gas stream from the second opening; the outlet housing being spaced apart from and above the inlet housing, and the inlet, outlet and deflection housings



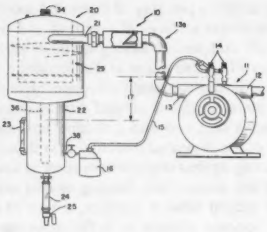
each being connected separately to the filter chamber; said deflection chamber being on the side of the filter chamber which is opposite to said inlet and outlet chambers and being in communication with said inlet and outlet chambers through the filter chamber, said deflection chamber having a lower portion for receiving said stream from said inlet chamber and an upper portion for directing said stream back through the filter chamber, the filter chamber being substantially closed at all sides with the filter material extending in a continuous uninterrupted manner between the inlet and outlet opening of the filter chamber and being provided with three passage means for passage of said stream through the filter chamber transversely to the conveying direction of the filter material, said three passage means including a first passage means in the form of said first opening, on said one side of the filter chamber and which is in communication with the inlet chamber, a second passage means, in the form of said second opening, on said one side of the filter chamber above the first passage means and which is in communication with said outlet chamber, and a third passage means on the opposite side of the filter chamber and which is in communication with the deflection chamber, said third passage means permitting passage of said stream from the inlet chamber to the lower portion of the deflection chamber, and after deflection of said stream in an upward direction through said deflection chamber, permitting passage of said stream from the upper portion of the deflection chamber back through the filter chamber, said third passage means being an opening which extends between the upper and lower portions of the deflection chamber.

4,263,029

OIL RECLAIMER AND MUFFLER ASSEMBLY AND SYSTEM

Paul R. George, Cambridge City, Ind., assignor to Cego, Inc., Cambridge City, Ind.

Filed Feb. 2, 1979, Ser. No. 8,475
Int. Cl.³ B01D *45/16, 17/02*
U.S. Cl. 55—398 **3 Claims**



3. An oil reclaimer and muffler assembly comprising an outer cylindrical casing having an inlet and closures at each end, one of said closures defining a top of the assembly and an exhaust opening, and the other closure having a funnel shape and defining an oil-collection opening at its lowest point and carrying in communication with the oil-collection opening, a collection pipe, a plurality of vanes surrounding the collection opening and collection pipe, and an oil reservoir encompassing the collection pipe, an inner cylindrical wall means carried within the outer cylindrical casing adjacent the closure forming the exhaust opening and carrying a spiral passage-forming means extending from the inner cylindrical wall means toward the inner surface of the outer cylindrical casing, said inner cylindrical wall means being of lesser length than said outer cylindrical casing, and being open at its lower end to form a cylindrical passgeway within the inner cylindrical wall means leading from a chamber formed at the bottom of the outer cylindrical casing to the exhaust opening, said inner cylindrical wall means carrying an annular plate below the spiral passage-forming means and adjacent the chamber, said annular plate having a width insufficient to extend to the outer cylindrical casing to provide a narrow annular passage for a gas stream and for collected oil and water adjacent the inner surface of the outer cylindrical casing whereby oil and water collected within the assembly is permitted to flow under the influence of gravity to the oil-collection opening for collection in the oil reservoir, said oil reservoir having a fitting located above its lower surface for withdrawal of the oil collected therein.

4,263,030

METHOD OF PRODUCING AN OPTICAL WAVEGUIDE MATERIAL

Ryuji Kobayashi, Urawa, and Kuniaki Wakabayashi, Hasuda, both of Japan, assignors to Mitsubishi Kinsoku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 92,044
Claims priority, application Japan, Nov. 20, 1978, 53-143160
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **3 Claims**

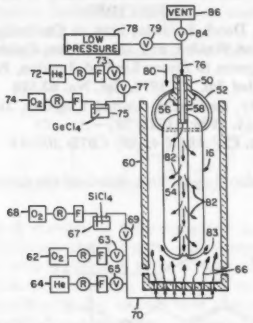
1. In the method of producing an optical waveguide material which comprises inserting a silica glass core material into a silica glass cladding material previously mechanically or chemically polished or heat treated respectively, making said core material and said cladding material fused by heating and pulling said fused core material and cladding material, improvements comprising passing a hydrogen-free compound containing at least one selected from the group consisting of C, N, O, S, Se and at least one of halogens in a vapor state through the clearance between said core material inserted and said cladding material prior to fusion thereof and vapor-phase treating

the surfaces of said core material and said cladding material with said hydrogen-free compound under heating up to a high temperature.

4,263,031
METHOD OF PRODUCING GLASS OPTICAL FILAMENTS

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,346
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—3 A **18 Claims**



1. A method of forming a glass article comprising the steps of

providing a tubular glass preform having an aperture therethrough, said preform having a network of continuous open pores throughout its mass, the composition throughout said preform being substantially uniform,

disposing said preform in a furnace where it is heated to an elevated temperature,

flowing into said preform aperture a stream of an atmosphere containing a drying agent for removing water from said preform and a doping agent, at least a portion of said stream flowing outwardly from the center of said preform through the interstices thereof to the outer surface thereof, said doping agent forming a dopant oxide, the concentration of which is greatest at the inner surface of said preform and which progressively decreases with increasing radius within said preform so that the refractive index within said preform is a maximum at the inner surface of said preform and decreases with increasing radius, and

consolidating said preform to form a tubular, dense glass body having a gradient refractive index.

4,263,032
METHOD OF MAKING OPTICAL FIBERS UTILIZING THERMOPHORETIC DEPOSITION OF GLASS PRECURSOR PARTICULATES

William R. Sinclair, and Willy W. van Roosbroeck, both of Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 934,816, Aug. 18, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,483
Int. Cl.³ C03C *25/02*; C03B *37/02*
U.S. Cl. 65—3 A **22 Claims**

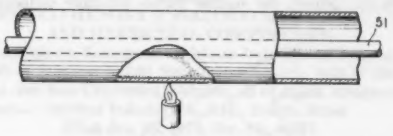
1. A method of fabricating optical fibers comprising:

a. forming glass precursor particulate material;

b. depositing the glass precursor particulate material on an appropriate substrate to yield an optical fiber preform; and

c. drawing the optical fiber preform into an optical fiber;

the invention CHARACTERIZED IN THAT

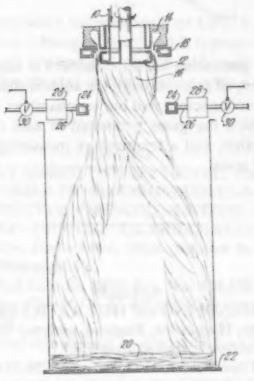


the particulate material is directed from regions of higher temperature to regions of lower temperature utilizing additional thermophoretic means.

4,263,033
METHOD AND APPARATUS FOR COLLECTING MINERAL FIBERS

Jan K. Michalek, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 26, 1979, Ser. No. 107,301
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—4 R **8 Claims**



1. Apparatus for collecting mineral fibers comprising:

a moving surface for receiving a flow of mineral fibers;

sensing means for sensing the speed of said moving surface and generating a voltage signal therefrom;

a voltage-to-frequency converter for generating a pulse signal in response to said voltage signal;

duty ratio control means for controlling the duration of each pulse during each cycle of said pulse signal; and

means for intermittently directing gases into the flow of mineral fibers in response to said pulse signal.

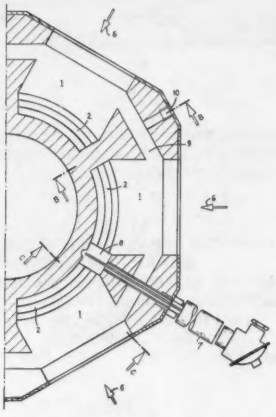
4,263,034
METHOD AND APPARATUS FOR CONTROL OF FIBERIZATION OF THERMOPLASTIC MATERIAL

Klaus Sistermann, Römerberg, and Hans Gärtner, Dannstadt-Schauernheim, both of Fed. Rep. of Germany, assignors to Saint-Gobain Industries, France

Filed Nov. 14, 1979, Ser. No. 94,168
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849357
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—6 **9 Claims**

1. Apparatus for use in fiberization of thermoplastic mineral material, such as glass, comprising a spinner for centrifugal delivery of streams of molten thermoplastic material, and gas

blast attenuation means including an annular burner structure having an annular gas discharge orifice positioned to deliver an annular blast in a path surrounding the spinner to effect gas blast attenuation of the streams of molten material delivered from the spinner, the annular burner structure including at



least two gas generating burner chambers in side-by-side relation for delivery of gases through the annular discharge orifice, a channel interconnecting said burner chambers and providing a zone in which the gases generated in said two chambers adjoin each other, and a temperature measuring device positioned in said zone.

4,263,035

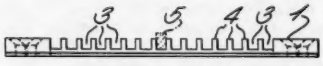
HANDLING OF HOT ARTICLES

Roger J. Dorey, Harpenden, England, assignor to United Glass Limited, Middlesex, United Kingdom

Filed Nov. 7, 1978, Ser. No. 959,183

Int. Cl.[3] **B32B** *3/10, 3/30, 27/04;* **F26B** *25/18*

U.S. Cl. 65—348 **9 Claims**



1. A deadplate comprising a support having a plurality of spaced channels in which are retained article-contacting strips of a material which stand proud of lands between the channels, the material being formed by molding a composition comprising a polyimide resin, carbon fibers and graphite.

5. In a machine for making glass articles of the kind including a forming mold and a deadplate for receiving and supporting hot newly-formed glass articles from the forming mold, an improved deadplate which comprises a support having an upper surface provided with a plurality of spaced channels in which are retained article-contacting strips which stand proud of lands between the channels, said strips being a moulded material which comprises polyimide resin, carbon fibers and graphite and which is lubricious and of low thermal conductivity defined as one which will allow the support and passage over it of a hot glass article while cooling fluid is simultaneously being allowed to contact the article, without thermally shocking or abrading the glass article.

4,263,036

METHOD AND COMPOSITION FOR CONTROLLING HYDRILLA

Raghavan Charudattan, Gainesville, Fla., assignor to Board of Reagents, State of Florida, Gainesville, Fla.

Filed Feb. 2, 1979, Ser. No. 9,386

Int. Cl.[3] **A01N** *63/04*

U.S. Cl. 71—66 **9 Claims**

1. A herbicidal concentrate for the preparation of compositions effective to control *Hydrilla verticillata comprising an effective amount of the microorganism Fusarium roseum* Culmorum adsorbed on an agronomically acceptable carrier.

4,263,037

5-CYANO-2,3-DIHYDROBENZOFURANS USEFUL AS HERBICIDES

Peter S. Gates; Derek Baldwin, both of Cambridge; Carol A. Wilson, Saffron Walden, and John Gillon, Cambridge, all of England, assignors to Fisons Limited, London, England

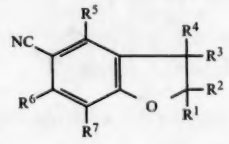
Filed Jul. 27, 1979, Ser. No. 62,511

Claims priority, application United Kingdom, Jul. 29, 1978, 31646/78; Oct. 24, 1978, 41982/78

Int. Cl.[3] **A01N** *43/08;* **C07D** *307/83*

U.S. Cl. 71—88 **7 Claims**

1. A 2,3-dihydro-5-cyanobenzofuran of the formula:



(I)

wherein R^1 represents hydrogen and R^2 represents hydrogen, hydroxy, alkoxy, unsubstituted alkanoyloxy, alkanoyloxy substituted by one or more hydroxy, alkoxy, alkylthio or halogen groups, benzoyloxy, alkenoyloxy, carbamoyloxy, alkylcarbamoyloxy, phenylcarbamoyloxy, dialkylcarbamoyloxy, alkylsulphonyloxy, alkoxycarbonyloxy, alkylthiocarbonyloxy, halogen, isothiocyanato, amino, alkylamino, dialkylamino, phenylamino, unsubstituted alkanoylamino, alkanoylamino substituted on the alkanoyl group bby one or more hydroxy, alkoxy, alkylthio or halogen groups, benzoylamino, alkenoylamino, carbamoylamino, alkylcarbamoylamino, phenylcarbamoylamino, dialkylcarbamoylamino, alkylsulphonylamino, alkoxycarbonylamino, alkylthiocarbonylamino, cyano or alkylthio, any alkyl moiety in the group R^2 being of 1 to 6 carbon atoms and any alkenyl moiety in the group R^2 being of 2 to 6 carbon atoms; R^3 and R^4 each represents hydrogen or alkyl of 1 to 6 carbon atoms; and R^5, R^6 and R^7, which may be the same or different, each represent hydrogen, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkanoyl of 2 to 6 carbon atoms or cyano.

5. A compound which is:

5-cyano-2,3-dihydro-3,3-dimethylbenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-hydroxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-methoxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-ethoxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-n-propoxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-isopropoxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-isobutoxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-acetoxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-propionyloxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-n-butyryloxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-isobutyryloxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-n-valeroyloxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-isovaleroyloxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-chloroacetoxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethyl-2-acryloyloxybenzofuran,

5-cyano-2,3-dihydro-3,3-dimethylbenzofuran-2-yl N-methylcarbamate,
5-cyano-2,3-dihydro-3,3-dimethylbenzofuran-2-yl N-phenylcarbamate,
5-cyano-2,3-dihydro-3,3-dimethyl-2-chlorobenzofuran, or
5-cyano-2,3-dihydro-3,3-dimethyl-2-isothiocyantobenzofuran.

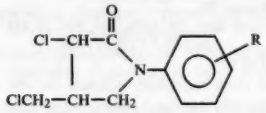
4,263,038
SYNERGISTIC HERBICIDAL COMPOSITIONS

Gerald H. Thiele, Sunnyvale, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 80,874, Oct. 1, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 125,815
Int. Cl.³ A01N *43/64*
U.S. Cl. 71—92 **6 Claims**

1. A synergistic herbicidal composition comprising a mixture of

(a) an effective amount of a pyrrolidone of the formula

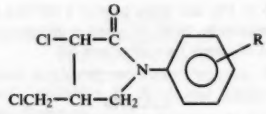


in which R is cyano or trifluoromethyl, and

(b) an effective amount of 3-amino-1,2,4-triazole, at a weight ratio of (a) to (b) of from about 0.25:1 to about 20:1.

4. A method of controlling undesirable vegetation which comprises applying to the locus where control is desired a herbicidal composition comprising a mixture of

(a) an effective amount of a pyrrolidone of the formula



in which R is cyano or trifluoromethyl, and

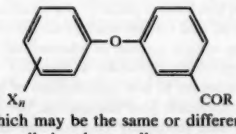
(b) an effective amount of 3-amino-1,2,4-triazole, at a weight ratio of (a) to (b) of from about 0.25:1 to about 20:1.

4,263,039
M-PHENOXYBENZAMIDE DERIVATIVES

Hiroshi Noguchi, Sonehigashi; Shunichi Hashimoto, Takarazuka; Shigeyoshi Kitamura, Sonehigashi; Takashi Matsuo, Saitama; Akihiko Mine, Kawanishi, and Katsuzo Kamoshita, Sonehigashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 792,221, Apr. 29, 1977, Pat. No. 4,173,464. This application May 31, 1979, Ser. No. 44,249
Claims priority, application Japan, May 7, 1976, 51/52430; May 13, 1976, 51/54989; Oct. 6, 1976, 51/120754; Dec. 28, 1976, 51/160388
Int. Cl.³ A01N *43/36;* C07D *207/06*
U.S. Cl. 71—95 **9 Claims**

1. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of a m-phenoxybenzamide compound of the formula:



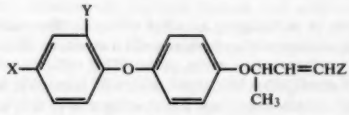
wherein X, which may be the same or different, is a halogen atom or a lower alkyl or lower alkoxy group, n is zero or an integer of 1 to 5 and R is a pyrrolidino or dimethylpyrrolidino group, and an inert carrier.

4,263,040
PHENOXYPHENOXY UNSATURATED DERIVATIVES AND HERBICIDAL COMPOSITION

Kazuo Jikihara, Kakegawa; Shigekazu Itoh; Shuichi Takayama, both of Shimizu; Koichi Sato; Ichiro Kimura, both of Shizuoka, and Isao Chiyomaru, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1979, Ser. No. 6,387
Claims priority, application Japan, Feb. 18, 1978, 53-17785; Jul. 7, 1978, 53-82732; Oct. 14, 1978, 53-126592
Int. Cl.³ C07C *153/023, 69/76;* A01N *37/06*
U.S. Cl. 71—100 **5 Claims**

1. A herbicidal composition which comprises a herbicidally effective amount of a phenoxyphenoxy derivative having the formula



(I)

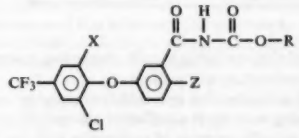
wherein X represents a halogen atom or CF_3; Y represents a hydrogen atom or a halogen atom; and Z represents —$COSR^1$ and R^1 represents lower alkyl, phenyl, chlorophenyl, chlorobenzyl or methoxybenzyl in combination with a suitable carrier.

4,263,041
OPTIONALLY SUBSTITUTED PHENYL, AND ALKYL N-[5-(2-CHLORO-4-TRIFLUOROMETHYL-6-OPTIONALLY SUBSTITUTED PHENOXY)-2-NITRO, HALO, OR CYANOBENZOYL]CARBAMATES

William S. Grove, Doylestown, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 25, 1980, Ser. No. 124,198
Int. Cl.³ A01N *37/46;* C07C *79/46*
U.S. Cl. 71—108 **15 Claims**

1. A compound represented by Formula I:



(I)

wherein:

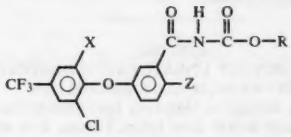
X is hydrogen (H), chloro (Cl), or bromo (Br);

Z is nitro (NO_2), halogen, or cyano (CN); and

R is an alkyl of up to four carbon atoms or

where A is halogen, an alkyl of up to three carbon atoms, an alkoxy of up to three carbon atoms, an alkylthio of up to three carbon atoms, cyano (CN), trifluoromethyl (CF_3), nitro (NO_2), or CO_2R^2, where R^2 is an alkyl of up to four carbon atoms, and n is an integer of 0, 1, 2, or 3.

7. A method of controlling weeds which comprises: contacting the weeds with a herbicidally effective amount of a compound represented by Formula I:



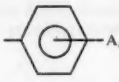
(I)

wherein:

X is hydrogen (H), chloro (Cl), or bromo (Br);

Z is nitro (NO_2), halogen, or cyano (CN); and

R is an alkyl of up to four carbon atoms or



wherein A is halogen, an alkyl of up to three carbon atoms, an alkoxy of up to three carbon atoms, an alkylthio of up to three carbon atoms, cyano (CN), trifluoromethyl (CF_3), nitro (NO_2), or CO_2R^2, where R^2 is an alkyl of up to four carbon atoms, and n is an integer of 0, 1, 2, or 3.

4,263,042

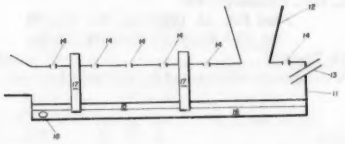
TECHNIQUE FOR TRANSFORMING SODA MATTE SLAG SULFIDES INTO SILICATES

Roger L. Altman, East Windsor, N.J., and M. Vikram Rao, Houston, Tex., assignors to N. L. Industries, Inc., Hightstown, N.J.

Filed Nov. 8, 1979, Ser. No. 92,295

Int. Cl.³ C22B 7/04

U.S. Cl. 75—24 **17 Claims**



1. A method for rendering a soda matte slag resistant to spontaneous combustion, comprising:

adding a silica-bearing flux to a sulfide-containing soda matte slag to convert a sufficient amount of said sulfide to a silicate so as to render said soda matte slag resistant to spontaneous combustion.

4,263,043

DESULFURIZING AGENT FOR INJECTION

Osamu Haida; Toshihiko Emi; Sumio Yamada; Fumio Sudo, and Hiraku Sonoda, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Feb. 6, 1980, Ser. No. 119,124

Claims priority, application Japan, Feb. 15, 1979, 54-16509

Int. Cl.³ C21C 7/02

U.S. Cl. 75—58 **6 Claims**

1. A desulfurizing agent for injection consisting essentially of lime powders having a particle diameter which allows at least 50 wt.% of the lime powders to pass through a screen mesh of 100 μm and containing 0.015 to 1.0 wt.% of silicone oil surfactant, 10 to 40 wt.% of carbonate of alkaline earth metals and 2 to 20 wt.% of carbon.

4,263,044

IRON/CHROMIUM/COBALT-BASE SPINODAL DECOMPOSITION-TYPE MAGNETIC ALLOY

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Continuation-in-part of Ser. No. 769,268, Feb. 11, 1977, Pat. No. 4,171,978. This application Apr. 6, 1979, Ser. No. 27,854

Claims priority, application Japan, Jun. 2, 1978, 53/67096

Int. Cl.³ C22C 38/18

U.S. Cl. 75—126 C **10 Claims**

1. A spinodal decomposition type magnetic alloy consisting by weight essentially of 19 to 23% chromium, 10 to 18% cobalt, 0.5 to 4% vanadium, 0.3 to 3% titanium, 0.1 to 2.5% tungsten and the balance iron.

4,263,045

STAINLESS DENTAL ALLOY FOR APPLICATION OF LOW-FUSING OPAQUEING PORCELAIN

Emil M. Prosen, Bala-Cynwyd, Pa., assignor to Neoloy Products, Inc., Posen, Ill.

Filed Aug. 30, 1979, Ser. No. 71,128

Int. Cl.³ C22C 19/07

U.S. Cl. 75—134 C **4 Claims**

1. A dental alloy especially adapted for the adhesion of opaqueing porcelain having a fusing temperature of approximately 1800° F., consisting essentially of:

Cobalt 40 to 60%

Chromium 18 to 35%

Tungsten 5 to 20%

Molybdenum 1 to 4%

Copper 0.5 to 2%

Iron 1 to 3%

Manganese 0.5 to 2%

Niobium 0.5 to 2%

Silicon 0.25 to 1% said alloy having a melting temperature of approximately 2650° F., and a linear coefficient of expansion of about 1.4×10^{-5} per °C.

4,263,046

SINTERABLE MASS FOR PRODUCING WORKPIECES OF ALLOY STEEL

Rudolf Fichte, Nuremberg; Hans-Joachim Retelsdorf, Weiherhof; Richard Jervis, Stolberg, and Günter Radel, Nuremberg, all of Fed. Rep. of Germany, assignors to GfE Gesellschaft für Elektrometallurgie mit beschränkter Haftung, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 682,030, Apr. 30, 1976, abandoned, Division of Ser. No. 614,678, Sep. 18, 1975, abandoned. This application Sep. 26, 1978, Ser. No. 945,900

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1974, 2444727

Int. Cl.³ B22F 1/00

U.S. Cl. 75—252 **3 Claims**

1. A sinterable mass to be used in the manufacture of workpieces of alloy steel, said mass being essentially composed of a major proportion of malleable-iron powder, a minor proportion of comminuted complex ferroalloy compositions highly resistant to oxidation at temperatures up to at least 1200° C., said minor proportion ranging between substantially 0.5% and 5% by weight of said mass, and about 0.2 to 0.6 weight-percent elemental carbon; said ferroalloy composition consisting essentially of a powdered solid blend, with a particle size below 10 microns, of carbides of iron, manganese, molybdenum and at least one further nonferrous metal plus a residual phase consisting mainly of iron, said further nonferrous metal being selected from the group which consist of chromium, vanadium and niobium, said carbides including a complex carbide of the formula M_7C_3 wherein M is a combination of iron with either manganese or chromium plus manganese, the carbon carbidically bound in said ferroalloy composition amounting to at least 4% by weight of said composition.

4,263,047

COLOR DEVELOPING INK

Akio Miyamoto, and Hiroharu Matsukawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 11, 1979, Ser. No. 74,460
Claims priority, application Japan, Sep. 11, 1978, 53/111578
Int. Cl.[3] C09D *11/00*
U.S. Cl. 106—21 12 Claims

1. A color developer for ink capable of being printed on paper by a letterpress printing machine or an offset printing machine consisting essentially of (i) a phenolic resin or a metal salt of an aromatic carboxylic acid and (ii) an alcohol having from 10 to 20 carbon atoms, said printed paper being characterized by satisfactory developing ability affording a light-resistant colored image when contacted with a color former and being free from stack time dependent stain.

4,263,048

SELF-HARDENING COMPOSITION AND COMPOSITE THEREFROM

Dennis J. Hacker, Albuquerque, N. Mex., assignor to High Efficiency Insulation Technologies, Inc., Albuquerque, N. Mex.

Filed Jan. 25, 1980, Ser. No. 115,544
Int. Cl.[3] C04B *19/04*
U.S. Cl. 106—84 11 Claims

1. A self-hardening composition consisting essentially of 3–5% by weight of an alkaline earth metal chloride, 0.5–1.5% by weitht of calcium metasilicate, 0.5–1.5% by weight of sodium fluorosilicate, 30–40% by weight of sodium silicate, 0.02–0.04% by weight of aluminum silicate clay and water.

4,263,049

FIBRE-REINFORCED PRODUCT AND METHOD OF PREPARING SAME

Karl E. Hansen, Kokkedal, and Peder Pedersen, Roskilde, both of Denmark, assignors to Rockwool International A/S, Hedehusene, Denmark

Filed Oct. 9, 1979, Ser. No. 82,547
Claims priority, application Denmark, Oct. 10, 1978, 4507/78
Int. Cl.[3] C04B *31/36*
U.S. Cl. 106—93 15 Claims

1. An asbestos-free, fiber-reinforced cementitious product comprising a major portion of a cementitious material and a reinforcing quantity of a fibrous material including a sufficient amount of eucalyptus fibers to provide a final product having improved bending strength characteristics.

4,263,050

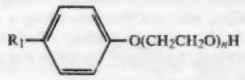
PROCESS FOR PREPARATION OF GRANULES CONTAINING VISCOUS SUBSTANCE AT HIGH CONCENTRATION

Makoto Yamanaka, Koganei; Takehiko Kobayashi, Zushi, and Takashi Fujino, Yokohama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 679,042, Apr. 21, 1976, abandoned.
This application Dec. 8, 1977, Ser. No. 859,190
Claims priority, application Japan, Apr. 30, 1975, 50-52190
Int. Cl.[3] C11D *11/00, 11/04*
U.S. Cl. 106—287.17 6 Claims

1. A process for preparing free-flowing granules containing a high concentration of viscous substance which consists essentially of the steps of

(1) blending into a viscous substance selected from the group consisting of alcohols having from 8 to 18 carbon atoms and which are soft, molten or liquid at a temperature lower than 40° C., and non-ionic surfactants having the formulae



and

$$R_2—O—(CH_2CH_2O)_mH$$

wherein R_1 is alkyl having 4 to 18 carbon atoms, R_2 is alkyl or alkenyl having 8 to 22 carbon atoms, and n and m is a number of from one to 50, and mixtures thereof,

from about 40 to about 300 percent by weight, based on the weight of said viscous substance, of solid particles of a first substance (A) selected from the group consisting of anhydrous sodium sulfate, anhydrous sodium tripolyphosphate, talc, bentonite, anhydrous calcium sulfate, crystalline cellulose, water-insoluble cellulosic pulp, hydroxyethyl cellulose, carboxymethyl cellulose and mixtures thereof, said solid particles of said first substance (A) having a particle size of smaller than about 60 mesh and being capable of being transformed to porous particles by absorbing water as water of crystallization or by physically absorbing water, and from about 30 to about 100 percent by weight, based on the weight of said viscous substance, of particles of second substance (B) selected from the group consisting of anhydrous silicic acid, aluminum silicate, magnesium silicate, calcium silicate, zeolites, aluminum hydroxide and mixtures thereof, said particles of said second substance (B) having a particle size of smaller than about 30 microns and having a high affinity to said viscous substance and capable of controlling the flowability of said viscous substance, to form a homogeneous first mixture consisting essentially of said viscous substance, first substance (A) and second substance (B),

(2) then adding to and blending in said first mixture obtained as the product of step (1), an aqueous solution of a third substance (C) having adhesiveness to said first mixture, said third substance (C) being selected from the group consisting of sodium silicate, colloidal silica, colloidal aluminum, polyvinyl alcohol, sodium carboxymethyl cellulose, polyethylene glycol having a molecular weight of at least 3000 and mixtures thereof, said aqueous solution of said third substance (C) containing sufficient water to impart to first substance (A) at least one mole of water of crystallization or sufficient water of absorption to fully saturate said first substance (A) whereby to transform said first substance (A) to porous particles, said third substance (C) being added to and blended in the first mixture at a controlled rate effective to gradually form porous particles of said first substance (A) containing said viscous substance in the voids of the thus-formed porous particles of said first substance (A), without forming agglomerates thereof whereby to obtain a homogeneous second mixture consisting essentially of said viscous substance, said first substance (A), said second substance (B) and said third substance (C),

then granulating the second mixture and obtaining granules thereof.

4,263,051

SOFT-SETTLING SILICA FLATTING AGENT

Roger A. Crawford, and Hubert J. Golden, both of Wadsworth, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 914,459, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 752,032, Dec. 20, 1976, abandoned. This application Jun. 7, 1979, Ser. No. 46,416
Int. Cl.[3] C09C *3/12;* C08K *9/06*
U.S. Cl. 106—308 Q 17 Claims

1. A process for preparing a soft-settling, hydrophilic, silica flatting agent, which comprises:

a. treating pellets of amorphous, hydrated precipitated silica

with between about 1 and 4 weight percent, based on silica, of liquid organopolysiloxane having sites reactive with the silica, said reactive sites being a substituent selected from the group consisting of alkoxy, hydroxyl, halogen, acyloxy, hydrogen, epoxides and alkenyl bound to a silicon atom,

b. milling the treated pellets before the organopolysiloxane is fully reacted therewith at temperatures from 15° C. up to 270° C. for a time sufficient to produce a silica flatting agent having agglomerate sizes of from 1 to 40 microns,

c. recovering silica flatting agent of step (b), and

d. aging the silica flatting agent for at least two hours, the agglomerates of said flatting agent having a reduced hydrophilic character over that of the silica pellets and having distributed uniformly thereon the organopolysiloxane-silica reaction product.

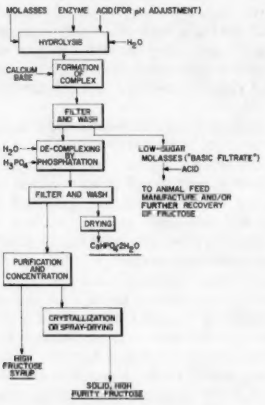
13. A coating composition containing the product of the process of claim **1**.

4,263,052

PRODUCTION OF FRUCTOSE AND USEFUL BY-PRODUCTS

Stanley E. Bichsel, Fargo, N. Dak.; Yueh Wang, Eagan, and Andrew M. Sandre, Moorhead, both of Minn., assignors to American Crystal Sugar Company, Moorhead, Minn.

Filed Oct. 12, 1979, Ser. No. 84,178
Int. Cl.³ C13K *3/00*
U.S. Cl. 127—41 **12 Claims**



1. A process for obtaining solid fructose or aqueous fructose solutions of at least 85 weight-% fructose purity from a raw material containing a fructofuranoside-type compound, said fructofuranoside-type compound including glucose monomer, said process comprising the steps of:

(a) hydrolyzing the fructofuranoside-type compound in said raw material to obtain an aqueous solution containing a hydrolyzate, said hydrolyzate comprising glucose and fructose monosaccharide hydrolysis products;

(b) adding a calcium base to precipitate a mixture of calcium-sugar complexes, said mixture comprising at least about 85 weight-% calcium-fructose complex;

(c) treating the calcium fructose complex obtained in step (b) with phosphoric acid in an aqueous reaction medium under temperature conditions sufficiently cool to avoid raising the temperature of said reaction medium, due to the reaction exotherm, above 40° C.; and maximizing the recovery of calcium phosphate precipitate by keeping the pH within the range of about 7 to about 9;

(d) recovering from the reaction products of step (c) said calcium phosphate precipitate and an aqueous sugar solution, the solids of said solution comprising at least 85 weight-% fructose;

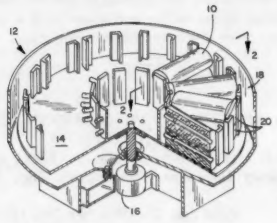
(e) lowering the pH of said aqueous sugar solution to less than about 7 but greater than about 3.

4,263,053

METHOD FOR CLEANING AND DRYING HOLLOW FIBERS

Charles N. McKinnon, Jr., 31975 Ave. Evita, San Juan Capistrano, Calif. 92675

Filed Apr. 23, 1979, Ser. No. 32,280
Int. Cl.³ B08B *9/00*
U.S. Cl. 134—21 **8 Claims**



1. A method of removing inherent oil from bundles of capillary hollow blood dialyzer fibers, comprising the steps of:

(a) allowing said fiber bundles to predrain by gravity for a period of time on the order of 15 hours, and

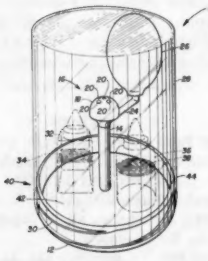
(b) then applying a centrifugal force to said fibers longitudinally thereof to drive said oil out of the interior of said fibers.

4,263,054

CONTACT LENS CLEANING AND RINSING METHOD

Melcheore F. Giambalvo, York, Pa., assignor to George D. Weaver and Scott S. Weaver, both of York, Pa., a part interest to each

Division of Ser. No. 14,334, Feb. 23, 1979, Pat. No. 4,223,782.
This application Oct. 12, 1979, Ser. No. 84,187
Int. Cl.³ B08B *7/04*
U.S. Cl. 134—21 **2 Claims**



1. A method of hard contact lens cleaning and rinsing, said method comprising placing a hard contact lens with a concave side surface thereof upon and in temporary immobilized vacuum sealed support communication with a convex vacuum head contact support surface of a contact lens cleaning and rinsing device such that a convex side surface of said lens, being the other side surface thereof, is openly disposed upon said convex vacuum head contact support surface for accomplishing cleaning and rinsing thereof while remaining immobilized, drop dispensing a contact lens cleaning solution upon said convex side surface of said lens, applying finger agitation

to said contact lens cleaning solution upon said convex side surface of said lens, drop dispensing a contact lens rinsing solution upon said convex side surface of said lens, applying finger agitation to said contact lens rinsing solution upon said convex side surface of said lens, spray dispensing said contact lens rinsing solution upon said convex side surface of said lens to flush remove to a downwardly disposed waste cleaning and rinsing solution collection reservoir foreign matter and cleaning solution residue therefrom, and removing said contact lens from said convex vacuum head contact support surface.

4,263,055

METHOD FOR CLEANING A PAINT ROLLER PAD

Elbert R. Permar, 312 Westwood Dr., Marshalltown, Iowa 50158

Filed Aug. 13, 1979, Ser. No. 65,992
Int. Cl.³ B08B *1/04*
U.S. Cl. 134—33 **2 Claims**

1. In a method of cleaning a generally hollow cylindrical paint roller pad wherein paint is removed from an exterior portion of the pad, the improvement comprising,

providing an elongated coil having an outside diameter less than the inside diameter of said paint roller pad,

axially inserting said coil into the bore of said roller pad, and

rotating said coil in a direction to unwind the same thereby radially expanding said coil to generally circumferentially engage said roller pad along the length thereof and rotating the pad therewith while removing paint from the exterior portion of the pad.

4,263,056

METHOD FOR THE MANUFACTURE OF LIGHT EMITTING AND/OR PHOTODETECTIVE DIODES

Daniel Bensahel; Jean Marine, and Bernard Schaub, all of Grenoble, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 24, 1979, Ser. No. 42,081
Claims priority, application France, Jun. 12, 1978, 78 18033
Int. Cl.³ H01L *7/02, 21/265*
U.S. Cl. 148—1.5 **11 Claims**

1. A method for manufacture of light emitting and/or photodetective diodes, comprising

(a) providing a semiconductor $Mg_xZN_{1-x}Te$ substrate,

(b) treating the substrate to incorporate a doping element therein,

(c) applying a layer of conductive material to the substrate and treating the applied layer to create a compensated layer having high resistivity in the substrate,

(d) implanting ions on a first fact of the compensated semiconductor substrate with sufficient energy to create two zones therein, a trapping zone in the semiconductor surface having a thickness less than said layer of high resistivity material, and an insulating zone above said trapping zone,

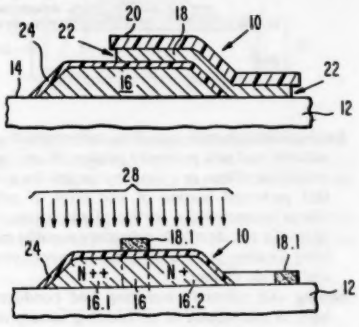
(e) forming conductive contacts on a second face of the substrate.

4,263,057

METHOD OF MANUFACTURING SHORT CHANNEL MOS DEVICES

Alfred C. Ipri, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 897,807, Apr. 19, 1978, Pat. No. 4,225,875.
This application Jan. 30, 1980, Ser. No. 116,896
Int. Cl.³ H01L *21/20, 29/78, 21/265*
U.S. Cl. 148—1.5 **10 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

providing a body of semiconductor material of a first conductivity type, the body having a common boundary surface;

defining a first active region in the body of semiconductor material by masking a portion of the common boundary surface;

introducing a first concentration of conductivity modifiers into the first region of the body of semiconductor material to dope the entire first region to an opposite conductivity type;

defining a second active region in the body of semiconductor material, separated from the first region, by removing only a portion of the mask;

introducing a second concentration of conductivity modifiers into the second region of the body of semiconductor material to dope the entire second region to the opposite conductivity type; and

simultaneously introducing conductivity modifiers into the first region, when the second region is being doped in order to dope the entire first region with a concentration of conductivity modifiers that is about two orders of magnitude higher than the second region.

4,263,058

COMPOSITE CONDUCTIVE STRUCTURES IN INTEGRATED CIRCUITS AND METHOD OF MAKING SAME

Dale M. Brown, and Marvin Garfinkel, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 47,889, Jun. 11, 1979, Pat. No. 4,228,212.
This application Jan. 24, 1980, Ser. No. 115,069
Int. Cl.³ H01L *21/283*
U.S. Cl. 148—6 **5 Claims**

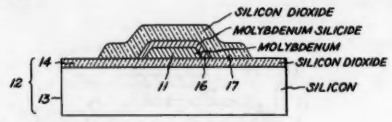
1. The method of forming a composite structure comprising:

providing a substrate of semiconductor material having an overlying layer of insulating material,

forming a conductor of a refractory metallic material which is substantially non-reactive with silicon dioxide in a desired pattern overlying said layer of insulating material,

forming over said layer of insulating material including said conductor of metallic material a layer of polycrystalline silicon,

patterning said layer of polycrystalline silicon to provide a patterned portion of said layer of polycrystalline silicon overlying said conductor and removing the remainder thereof,



heating said substrate including said conductor of metallic material and said patterned portion of said layer of polycrystalline silicon to a temperature and for a time to cause said patterned portion of said layer of polycrystalline silicon to react with a portion of said conductor to form a layer of a silicide of said refractory metallic material overlying another portion of said conductor unconverted to said silicide thereof,

heating said substrate including said conductor and said layer of said silicide in an oxidizing atmosphere at a temperature and for a time to cause said oxidizing atmosphere to react with said layer of said silicide to convert a portion thereof to silicon dioxide overlying another portion of said layer of said silicide unconverted to silicon dioxide.

4,263,059

COATING SOLUTIONS OF TRIVALENT CHROMIUM FOR COATING ZINC AND CADMIUM SURFACES

Donald J. Guhde, Euclid, and Dale M. Burdt, North Olmsted, both of Ohio, assignors to Rohco, Inc., Cleveland, Ohio

Filed Dec. 21, 1979, Ser. No. 106,093

Int. Cl.³ C23F 7/26

U.S. Cl. 148—6.2 **15 Claims**

8. A method of preparing an aqueous acidic chromate coating solution for treating a zinc or zinc alloy surface which comprises the steps of:

(a) preparing a green trivalent chromium ion concentrate by reducing an aqueous solution of hexavalent chromium with sufficient reducing agent to reduce all of the hexavalent chromium to trivalent chromium and raising the pH of the concentrate to between 2 and 4 with a base,

(b) preparing a blue concentrate of trivalent chromium by reducing an aqueous solution of hexavalent chromium with sufficient reducing agent to reduce all of the hexavalent chromium to trivalent chromium and mixing the reduced chromium ion-containing solution with a soluble fluoride compound and an acid, and

(c) adding a portion of the green concentrate obtained in step (a) to water along with a portion of the blue concentrate obtained in step (b) to form the coating solution.

4,263,060

METHOD FOR TREATING PARTS MADE OF TITANIUM OR TITANIUM ALLOY, AND PARTS PRODUCED THEREBY

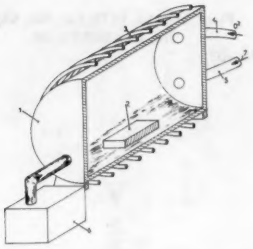
Antoine Gaucher, and Bernard Zabinski, both of Saint-Etienne, France, assignors to Centre Stephanois de Recherches Mecanique Hydromecanique et Frottement, Andrezieux-Boutheon, France

Continuation of Ser. No. 495,773, Aug. 8, 1974, abandoned. This application Jan. 22, 1979, Ser. No. 5,160

Claims priority, application France, Nov. 9, 1973, 73 40795; Jun. 27, 1974, 74 23069

Int. Cl.³ C23F 7/06

U.S. Cl. 148—6.3 **18 Claims**



1. A method of treating a part which contains titanium in its exterior surface to improve the frictional properties and the resistance of such parts to wearing and seizing comprising the steps of:

removing at least a portion of a natural layer substantially of titanium dioxide which covers said part;

placing said part within a gas and fluid-tight enclosure;

evacuating said enclosure until the pressure therein is between about 1 Torr and 10^{-8} Torr;

isolating said enclosure from the evacuating means;

introducing a predetermined quantity of oxygen into said evacuated enclosure;

a first quantity of said oxygen within said enclosure ranging from about 10^{-3} to about 2.55 milligrams for each square centimeter of total external surface area of said part or parts within said evacuated enclosure at a point in time during said treatment; and

heating said enclosure for a predetermined time to a predetermined temperature between about 450° C. to about 880° C.; and

wherein the quantity of said oxygen within said evacuated enclosure substantially continuously decreases from said first quantity during said treatment, forming an oxide layer on the surface of said part, said oxide layer having a percentage of oxygen which substantially continuously decreases from an external surface of said layer to said surface of said part.

4,263,061

PROCESS FOR FORMING A HIGH RESOLUTION X-RAY INTENSIFYING SCREEN WITH ANTIREFLECTING SUBSTRATE

Carol L. Fatuzzo, Pine Springs, Minn., and George D. Foss, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 890,673, Mar. 27, 1978, Pat. No. 4,204,125. This application Oct. 31, 1979, Ser. No. 89,881

Int. Cl.³ H01J 1/62

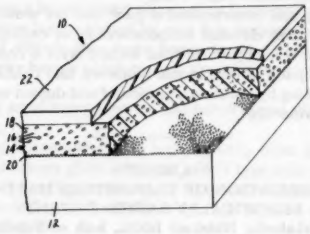
U.S. Cl. 148—6.3 **3 Claims**

1. A process for forming image converting screens comprising

(a) preparing a support layer having a substantially planar surface of substantially non-oxidized aluminum,

(b) converting a surface layer of said aluminum to boehmite

by exposing said layer to steam at a temperature between 85° and 98° C. at atmospheric pressure for 5–15 minutes, to form said boehmite as a plurality of closely spaced and randomly positioned discrete leaflets of varying heights and shapes, which leaflets extend from the aluminum



surface a distance of not less than 20 nm and the bases of which contact the bases of substantially all adjacent leaflets to provide a total reflectance of normally incident light of less than one percent, and

(c) coating onto the boehmite leaflets a layer of fluorescent particles and polymeric binder.

4,263,062

RUST-PREVENTIVE COMPOSITIONS

Joseph F. Anzenberger, New City, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 2, 1979, Ser. No. 63,317
Int. Cl.³ C23F 7/10
U.S. Cl. 148—6.15 R **6 Claims**

1. A rust preventive composition consisting essentially of:

(A) from 65 to 90 weight percent of an aryl phosphate ingredient represented by the formula:

wherein R_1, R_2, and R_3 are the same or different and are selected from aryl, alkaryl, alkyl, aralkyl or cycloalkyl radicals having from one to about thirty carbon atoms; with the proviso that at least one of R_1, R_2, or R_3 is aryl or alkaryl;

(B) from about 0.1 to about 5.0 weight percent of an oil soluble calcium petroleum sulfonate ingredient; and

(C) from about 20 to about 30 weight percent of a liquid polyolester ingredient, said polyolester ingredient being the reaction product of a polyhydric alcohol and a hydrocarbonaceous monocarboxylic acid.

4,263,063

PROCESS FOR STABILIZING DIMENSIONS OF DUPLEX STAINLESS STEELS FOR SERVICE AT ELEVATED TEMPERATURES

Frederick C. Hull, Pittsburgh, Pa., and John C. Tobin, Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

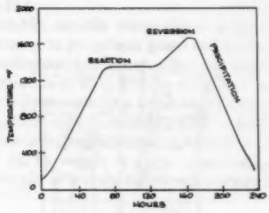
Filed Jul. 5, 1979, Ser. No. 55,210
Int. Cl.³ C21D 1/00
U.S. Cl. 148—136 **4 Claims**

1. A process for stabilizing the dimensions of a member made of duplex stainless steel having a dual microstructure of austenite plus delta ferrite and which is to be exposed in service to temperatures in the range of 900°–1200° F. (489°–788° C.) said process comprising the following steps:

heating the member to a reaction temperature about 1375° F. (746° C.);

maintaining the member at a temperature of about 1375° F. (746° C.) for about 50 hours;

subsequently raising the temperature of the member to a reversion temperature in the range of about 1625°–1750° F. (885°–954° C.);



maintaining the member at a temperature within the reversion temperature range for a period of about ½ to 2 hours per inch (25.4 mm) of maximum section thickness in the member;

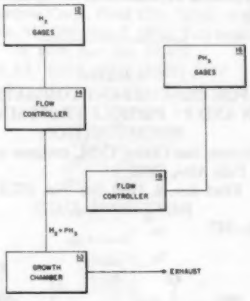
and subsequently cooling the member from the reversion temperature to at least 800° F. (427° C.) at a rate between about 10° and 200° F. (6° and 110° C.) per hour.

4,263,064

METHOD OF LIQUID PHASE EPITAXIAL GROWTH

Arthur R. Clawson; Wing Y. Lum, both of San Diego, and Gerald E. McWilliams, Corona, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 19, 1980, Ser. No. 122,222
Int. Cl.³ H01L 21/208
U.S. Cl. 148—171 **8 Claims**



1. In a method of growing a layer of crystal by liquid phase epitaxy upon an InP substrate wherein the crystal layer is grown by contacting the substrate with a saturated solution of a III-V compound containing phosphorus, the improvement comprising the steps of:

(a) heating the solution and substrate in a growth chamber to the liquidus temperature of the solution;

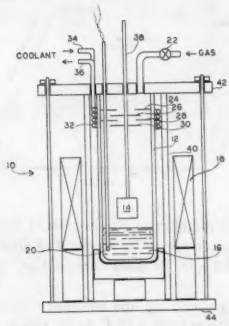
(b) introducing an atmosphere comprising hydrogen with 10^{-5} to 10^{-4} mole fraction of PH_3 into the growth chamber, whereby the substrate surface is stabilized; and

(c) bringing the solution and substrate into contact for epitaxially growing the crystal.

4,263,065
SEMI-OPEN LIQUID PHASE EPITAXIAL GROWTH SYSTEM

Cheng-Chi Wang, Thousand Oaks, and August H. B. Vanderwyck, Newbury Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 24, 1980, Ser. No. 132,756
Int. Cl.[3] H01L *21/208*
U.S. Cl. 148—171 10 Claims

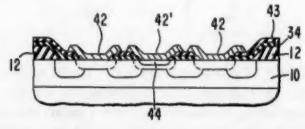


1. A semi-open method for growing an epitaxial layer on a substrate, comprising the steps of:
(a) placing a growth solution and the substrate within a pressure and temperature controlled container;
(b) increasing the pressure within the container to reduce the vaporization of components dissolved in the solution;
(c) establishing a cooling zone within the container to condense components vaporized from the solution;
(d) increasing the temperature of the solution sufficiently to maintain the saturation of the solution;
(e) effecting contact between the solution and the substrate; and
(f) reducing the temperature of the solution at a predetermined rate, thereby causing the dissolved components in the solution to crystallize in an epitaxial layer on the substrate.

4,263,066
PROCESS FOR CONCURRENT FORMATION OF BASE DIFFUSION AND P+ PROFILE FROM SINGLE SOURCE PREDEPOSITION

Knute E. Kolmann, San Carlos, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jun. 9, 1980, Ser. No. 157,914
Int. Cl.[3] H01L *21/225*
U.S. Cl. 148—187 6 Claims

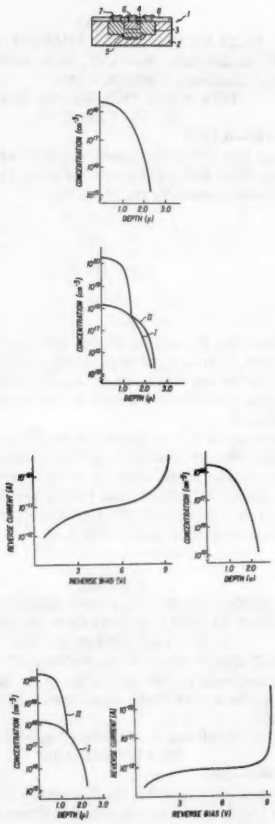


1. A process for concurrently forming a first active region diffusion profile and a p^+ profile in a semiconductor material comprising the steps of:
defining lateral boundaries for said first active region on the surface of said semiconductor material;
predepositing a selected dopant over a surface region of said semiconductor;
depositing a first material over the predeposited dopant, said first material impermeable to diffusion therein by said dopant;
redefining lateral boundaries for said first active region on the surface of said first material;
removing said first material from surface regions interior of said first active region forming windows to the surface of said first active region; and
diffusing said predeposited dopant into the semiconductor material at elevated temperatures in an oxidizing atmosphere whereby an oxidized surface layer is concurrently and rapidly formed in said windows, said oxidizing layer absorbing by diffusion a portion of said dopant underlying said windows.

4,263,067
FABRICATION OF TRANSISTORS HAVING SPECIFICALLY PAIRED DOPANTS

Kouichi Takahashi; Hidekuni Ishida, both of Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 910,909, May 30, 1978. This application Feb. 21, 1980, Ser. No. 123,276
Claims priority, application Japan, Jun. 9, 1977, 52/67307
Int. Cl.[3] H01L *21/225, 29/36*
U.S. Cl. 148—190 4 Claims



1. A method of manufacturing a semiconductor device which comprises the steps of:

providing a N type collector layer in an N type silicon semiconductor wafer having a substantially flat surface;

coating said N type collector layer with a first oxide film layer;

forming a first opening in said first oxide film layer such that a portion of the surface of said N type collector layer is exposed;

depositing a boron doped silicate glass layer on said N type collector layer exposed by said first opening, said boron doped silicate glass layer being doped with an N type impurity having a high energy of combination with vacancies;

forming an undoped layer on said boron doped silicate glass layer;

diffusing boron and said N type impurity from said boron doped silicate glass layer into said N type collector layer such that a P type base layer in contact with said N type collector layer is formed having a PN junction extending to said surface;

removing said boron doped silicate glass layer and said undoped glass layer from said semiconductor wafer;

covering said N type collector layer and said P type base layer with a second oxide film layer;

forming a second opening in said second oxide film layer, said second opening being smaller than said first opening in said first oxide film layer; and

diffusing phosphorus and arsenic which are N type impurities through said second opening in said second oxide layer into said P type base layer such that an N type emitter layer is formed which is in contact with said P type base layer having a PN junction extending to said surface and which constitutes a transistor together with said N type collector layer and said P type base layer.

4,263,068

TL-166 BLASTING AGENT

Donald W. Edwards, Provo, Utah; Thomas M. Zukovich, Palatine, Ill.; Ronald D. Thomas, Spanish Fork, and Ronald M. Weigel, Salt Lake City, both of Utah, assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Jun. 28, 1979, Ser. No. 53,129

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 **17 Claims**

1. A blasting agent comprising ammonium nitrate, a fuel and a thickener therefor, the fuel comprising a nitroalkane of 1 to 3 carbon atoms and fuel oil and the thickener comprising bentonite.

4,263,069

INHIBITOR FOR GUN PROPELLANTS

Russell Reed, Jr., Ridgecrest, Calif., and Kenneth L. Moore, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 5, 1979, Ser. No. 91,286

Int. Cl.³ C06B *45/22*

U.S. Cl. 149—11 **4 Claims**

1. A method for improving the efficiency of and lowering the peak pressure produced by a high force, high flame temperature gun propellant comprising the steps of:

A. coating the propellant with an oligomer having the formula:

$$RHN(CH_2CH_2\overset{H}{N})_n(CH_2CH_2\overset{R}{N})_mCH_2CH_2NHR$$

wherein R is $-CH_2CH_2CH_2Si(OCH_3)_3$, wherein n is an integer having a value of from 5 to 50 and wherein m is an integer having a value of from 1 to 5; and

B. allowing the oligomer to form a polymer.

4,263,070

THERMALLY STABLE GUN AND CASELESS CARTRIDGE PROPELLANTS

Raymond M. Price, Hollister, and Russell Reed, Jr., Ridgecrest, both of Calif., assignors to Thiokol Corporation, Newtown, Pa.

Continuation-in-part of Ser. No. 329,258, Jan. 17, 1973, abandoned. This application Mar. 5, 1974, Ser. No. 449,195

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.4 **6 Claims**

1. An extrudable, curable composition suitable for use in making a caseless gun propellant grain and having improved water and oil resistance, said composition consisting essentially of an intimate mixture of 65 to 90% by weight of finely divided HMX, 5 to 20% by weight of a block copolymer of ethylene oxide and propylene oxide containing 40% to 60% by weight of ethylene oxide units and having a molecular weight of 1000 to 4000, 0.5 to 5% by weight of a triol cross-linking agent and 1 to 15% by weight of a multi-functional isocyanate.

4,263,071

ADDITIVE FOR REDUCING COMBUSTION INSTABILITY IN COMPOSITE SOLID PROPELLANTS

Leland S. Bain, San Jose, and Thomas P. Rudy, Saratoga, both of Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 19, 1974, Ser. No. 490,159

Int. Cl.³ C06B *45/10*; C06D *5/00*

U.S. Cl. 149—19.9 **6 Claims**

1. In a composite propellant composition adapted for combustion at elevated pressures which comprises an organic binder having dispersed therethrough a particulate oxidizing agent, said composition being substantially free from ingredients whose combustion products are solids and being chemically balanced such that the exhaust gas stream is substantially free of particulate materials; the imprpovement whereby stable burning at higher combustion chamber pressure is permitted which comprises a combustion stabilizing amount of copper phthalocyanine dispersed through said propellant composition.

4,263,072

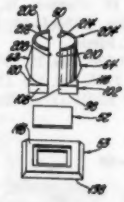
METHOD OF MANUFACTURING A LAMP HOUSING

Dale L. Bull, and Norman A. Rautiola, both of Reed City, Mich., assignors to Nartron Corp., Reed City, Mich., a part interest

Division of Ser. No. 940,268, Sep. 7, 1978. This application May 9, 1979, Ser. No. 37,475

Int. Cl.³ B32B *31/16*; B60Q *3/04*

U.S. Cl. 156—73.1 **5 Claims**



5. A method of manufacturing a lamp housing assembly having a generally tubular housing body; comprising the steps of molding a first longitudinal half of said generally tubular housing body as to have a first longitudinal end formed as to be situated generally transversely thereof; molding a second longitudinal half of said generally tubular housing body as to have a second longitudinal end formed as to be situated generally transversely thereof; forming a lens of translucent material; molding a lens retainer; placing the lens retainer in suitable fixture means; placing the lens atop the retainer; placing the first longitudinal half of said generally tubular housing body in said fixture means as to have said first longitudinal end thereof

juxtaposed to said lens and said lens retainer; placing the second longitudinal half of said generally tubular housing body in said fixture means as to have said second longitudinal end thereof juxtaposed to said lens and said lens retainer; and applying sonic wave energy to said first and second longitudinal halves and said lens retainer as to cause welding of material to occur longitudinally as between said first and second longitudinal halves, as between said first longitudinal end of said first longitudinal half and said lens retainer and as between said second longitudinal end of said second longitudinal half and said lens retainer.

4,263,073

PROCESS FOR RELEASING LAMINATES

Richard F. Jaisle, Batesville, Ind., and Walter W. Schiermeier, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Continuation of Ser. No. 913,707, Jun. 8, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,492

Int. Cl.[3] **B32B** *31/00*

U.S. Cl. 156—90 **7 Claims**

1. A method of releasing laminates from one another in a heat and pressure consolidated press pack which comprises

(1) arranging a plurality of thermosetting synthetic resin-impregnated fibrous core sheets in superimposed relationship in groups of at least two stacks,

(2) separating each of said two stacks from one another with a pair of separator sheets, each separator sheet comprising a web of phenol-formaldehyde resin-free paper having a water absorption of at least about 200 seconds, only one side of which has been sized with a water-soluble salt of an alkaline earth metal or earth metal in an amount sufficient to provide a solids content of said salt distributed throughout the sized surface of said web ranging from about 0.001% to about 10%, by weight, based on the dry weight of the sized web, and then coated on its sized side with at least 0.5 lbs. per ream of a film of a salt of alginic acid, the alginic acid salt coated side of each of said separator sheets in said pair facing one another,

(3) consolidating said stacks of core sheets and said separator sheets by the application of heat and pressure thereto and,

(4) separating the resulting laminates from one another at the locus of said alginic acid salt coated sides of said separator sheets, the bottommost surface of each resulting laminate constituting one of said separator sheets.

4,263,074

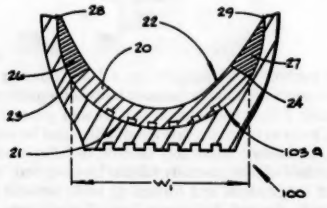
TIRE LINER AND METHOD OF PREPARATION

Donald R. Price, Lansing, Mich., assignor to Harold H. Vischer, Brooklyn; Harold H. Vischer, Jr., Jackson; Michael L. Vischer, Jackson; Ian C. McLeod, Lansing and Charles E. Sherry, Holt, all of, Mich.

Division of Ser. No. 51,720, Jun. 25, 1979. This application Apr. 11, 1980, Ser. No. 139,430

Int. Cl.[3] **B29H** *13/00;* **B60C** *19/12*

U.S. Cl. 156—110 R **13 Claims**



1. The method for fabricating a shaped annular tire liner of the type adapted to fit inside of, in contact with and around a casing forming a pneumatic tire, wherein the tire includes a road contacting width of annular tread supported by two spaced apart annular sidewalls each having a centrally located circular hole and an annular bead around the hole for mounting the tire on a wheel rim and with a generally U-shaped surface inside the casing and wherein the liner has a thickness which provides substantial protection against and resistance to penetration to the inside of the casing through the liner thereby reducing the frequency of flat tires which comprises:

(a) providing an elongate strip of rubber with a length and two opposing ends such that the strip will conform to the U-shaped surface around a pneumatic tire casing of a selected size with the ends together and with the strip in compression by the casing, wherein the elongate strip includes a high temperature and pressure vulcanized and molded rubber section along the length which has a width defined by two long sides which is at least about two-thirds times the width of the tread and includes a low temperature and pressure vulcanizable rubber bonded along at least the sides of the vulcanized and molded rubber section;

(b) forming an annular strip from the elongate strip by joining the ends of the elongate strip together with a thin section of low temperature and pressure vulcanizable rubber material; and

(c) vulcanizing the vulcanizable material between the ends and along the sides of the annular strip thereby forming the tire liner.

4,263,075

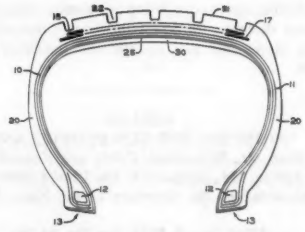
METHOD OF MAKING A PUNCTURE-SEALING TIRE WITH SEALANT CONSISTING OF A VINYLIDENE-TERMINATED LIQUID POLYMER AND AN AMINE

Harold H. Bowerman, Jr., Fairview Park, and Robert W. Ireland, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 791,759, Apr. 23, 1977, Pat. No. 4,214,619. This application Jan. 21, 1980, Ser. No. 113,848

Int. Cl.[3] **B60C** *21/08;* **C08F** *26/08, 126/06;* **C08L** *63/00*

U.S. Cl. 156—115 **15 Claims**

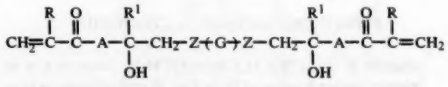


1. A method of making a puncture-sealing pneumatic tire comprising:

(a) cleaning the inside of a vulcanized tire,

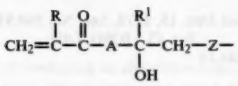
(b) applying a sealant layer to the inside of the vulcanized tire, said sealant layer consisting of:

(1) at least one vinylidene-terminated polymer having the formula



wherein Z is selected from the group consisting of —S—,

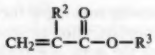
and —O—, A is a bivalent radical containing 1 to 10 atoms wherein at least one of said atoms is selected from the group consisting of C, O, S, and N, R and R^1 are hydrogen or alkyl radicals containing 1 to 4 carbon atoms, and G is a polymeric backbone comprising carbon-carbon linkages, said vinylidene-terminated polymer containing an average of from about 1.5 to about 4



groups per molecule,

wherein said backbone comprising carbon-carbon linkages contains polymerized units of at least one vinylidene monomer having at least one terminal $CH_2{=}C<$ group, said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms,

(d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, (e) acrylic acids and acrylates having the formula



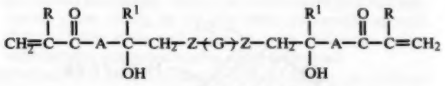
said R^2 being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R^3 being hydrogen, an alkyl or hydroxy alkyl radical containing 1 to 18 carbon atms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms; and

(2) at least one amine wherein said amine is difunctional or polyfunctional.

9. A method of making a puncture-sealing pneumatic tire comprising:

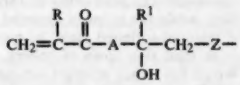
(a) coating an air impervious liner with an adherent sealant layer, said sealant layer consisting of:

(1) at least one vinylidene-terminated polymer having the formula

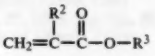


wherein Z is selected from the group consisting of —S—,

and —O—, A is a bivalent radical containing 1 to 10 atoms wherein at least one of said atoms is selected from the group consisting of C, O, S and N, R and R^1 are hydrogen or alkyl radicals containing 1 to 4 carbon atoms, and G is a polymeric backbone comprising carbon-carbon linkages, said vinylidene-terminated polymer containing an average of from about 1.5 to about 4



wherein said backbone comprising carbon-carbon linkages contains polymerized units of at least one vinylidene monomer having at least one terminal $CH_2{=}<$ group, said monomer being selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, (e) acrylic acids and acrylates having the formula



said R^2 being hydrogen or an alkyl radical containing 1 to 3 carbon atoms and said R^3 being hydrogen, an alkyl or hydroxy alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms;

(2) at least one amine wherein said amine is difunctional or polyfunctional.

(b) building said sealant coated liner onto an inner portion of an unvulcanized tire construction having bead, tread, and carcass portions such that said sealant layer is disposed between said liner and said carcass;

(c) shaping said unvulcanized tire construction;

(d) molding said tire construction; and

(e) heating said tire construction under pressure to simultaneously covulcanize said construction and adherent sealant layer to form said pneumatic tire containing an integral sealant layer.

4,263,076

POLYGONALLY WRAPPED SLEEVE, AND METHODS AND DEVICES FOR MAKING SAME

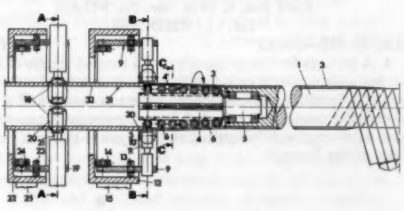
Franz J. Saul, Gurzenicher Str. 61, 5160 Duren, Fed. Rep. of Germany

Division of Ser. No. 579,058, May 20, 1975, Pat. No. 4,120,323. This application Aug. 4, 1978, Ser. No. 931,261

Claims priority, application Fed. Rep. of Germany, May 20, 1974, 2424413

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—194 **12 Claims**



1. A method for making substantially flatsided polygonal tubular packaging sleeves comprising the steps of

applying to selected strips of material, a bonding material which causes the material of said strips to be softened and deformable until said bonding material sets,

wrapping said strips of material about a stationary spindle in overlayed relationship to each other to form a tube,

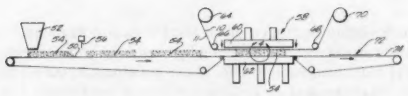
causing said tube, while the strips of material thereof are in the bonding material-softened state, to move off of said spindle over at least two rows of rollers, the planes of rotation of which rollers are oriented substantially radially with respect to the axis of said spindle, said rollers being so positioned with respect to said spindle that the inside of tubes passing thereover will be borne upon by said rollers to provide bearing surfaces over which longitudinally oriented corners will be produced in said tubes.

4,263,077

IN-PRESS TRANSFER PAINTING OF HARDBOARD

Victor H. Rampelberg, Flossmoor, Ill., assignor to Avery International Corporation, San Marino, Calif.

Filed May 12, 1978, Ser. No. 905,129
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—238 **30 Claims**



1. A method for manufacturing hardboard having a painted surface comprising:

forming a loose layer containing wood fibers;

placing over the loose fibrous layer a temporary carrier sheet having a paint layer coated thereon, the paint layer including a pre-hardened paint coat comprising a pigmented synthetic resinous material on the carrier sheet, the paint coat being sufficiently heat-resistant to remain hardened under a temperature in excess of 400° F.; and

applying pressure and heat in excess of 400° F. to the fibrous layer and to the paint layer coated on the carrier sheet to compress the fibrous layer and form an integral hardboard piece while at the same time transferring the paint coat from the carrier to a surface of the formed board, the paint coat remaining in the hardened condition throughout formation of the board and transfer to the surface of the board to provide hardboard having said paint coat bonded to its surface.

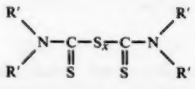
4,263,078

METHOD OF MAKING AN ARTICLE COMPRISING POLYSULFIDE RUBBERS

Edward G. Millen, Princeton, and Frank K. Pypcznski, Lawrenceville, both of N.J., assignors to Thiokol Corporation, Newtown, Pa.

Filed Jun. 8, 1978, Ser. No. 913,631
Int. Cl.³ B29D *7/02*
U.S. Cl. 156—244.11 **15 Claims**

1. A process for the preparation of a formed article of manufacture comprising a cured rubber based on a thiol terminated liquid polysulfide polymer cured with zinc oxide and a sulfur containing compound selected from 2-mercaptobenzothiazol, zinc diloweralkyldithiocarbamate, and alkyl thiuram polysulfides of the formula



wherein x is from about 2 to about 6 and R'' is alkyl of from 1 to about 10 carbon atoms either straight chain, branched chain or cyclic or R' moieties attached to the same nitrogen atom may be concatenated and taken together with said nitrogen atom to form a heterocyclic ring, which comprises:

(a) extruding said cured rubber through a die under heat and pressure; and

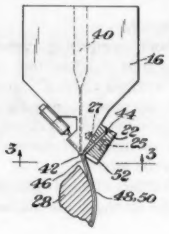
(b) allowing the extruded rubber of step (a) to cool and solidify.

4,263,079

METHOD OF FORMING AN INTEGRAL CLOSURE FOR A THERMOPLASTIC CONTAINER

Thomas A. Sutrina, Rockford, Ill., and R. Douglas Behr, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 15, 1978, Ser. No. 969,911
Int. Cl.³ B29D *7/02*
U.S. Cl. 156—244.11 **9 Claims**



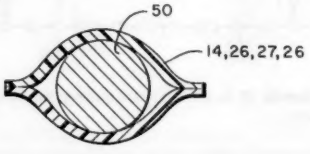
1. A method for forming an integral thermoplastic fastening means on a cast thermoplastic film or sheet extruded through flat die lips comprising the steps of extruding fastener profiles angularly disposed towards said cast film or sheet, joining said profiles and film or sheet, and cooling said film or sheet and profiles upon a chill roll after said joining, directing said joining so as to occur closer to the die lips than to the chill roll.

4,263,080

METHOD OF MAKING PACKAGE FOR PHOTOGRAPHIC FILM

Philip C. Whiting, Jr., Holyoke, Mass., assignor to Ludlow Corporation, Needham Heights, Mass.

Division of Ser. No. 774,934, Mar. 7, 1977, Pat. No. 4,174,038.
This application Jun. 18, 1979, Ser. No. 49,177
Int. Cl.³ B29D *7/02*
U.S. Cl. 156—244.11 **2 Claims**



1. A process of forming an opaque barrier layer of polyethylene and carbon black comprising the coextrusion of a central layer of polyethylene containing from 15 to 25% carbon black, between two exterior layer of polyethylene which comprises from 0 to 10 percent carbon black and wherein such extrusion is through a hot extrusion die and said exterior layers are zones forming means to minimize build-up of the material being extruded on the surfaces of said die and to protect said central layer from contact with said die and thereby achieve a smooth extrudate of high carbon content.

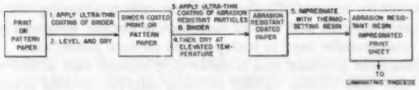
4,263,081
ABRASION-RESISTANT LAMINATE

Herbert I. Scher, and Israel S. Ungar, both of Randallstown, Md., assignors to Nevamar Corporation, Odenton, Md.

Continuation-in-part of Ser. No. 879,848, Feb. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 758,265, Jan. 10, 1977, abandoned. This application Dec. 6, 1978, Ser. No. 966,921

Int. Cl.³ B32B *31/12*

U.S. Cl. 156—279 **14 Claims**


PRINT OR PATTERN PAPER
1. APPLY ULTRA-THIN COATING OF BINDER
2. LEVEL, AND DRY
BINDER COATED PRINT OR PATTERN PAPER
3. APPLY ULTRA-THIN COATING OF ABRASION RESISTANT PARTICLES IN BINDER
4. THEN DRY AT ELEVATED TEMPERATURE
ABRASION RESISTANT COATED PAPER
5. IMPREGNATE WITH THERMO-SETTING RESIN
ABRASION RESISTANT RESIN IMPREGNATED PRINT SHEET
TO

1. In a method of producing an abrasion-resistant decorative laminate from at least one backing layer and a thermosetting resin impregnated decorative facing sheet, said laminate having enhanced abrasion resistance without an overlay layer, the method comprising:

coating a decorative facing sheet with an ultra-thin wet layer of a mixture of (1) an abrasion-resistant hard mineral of particle size 20–50 microns in quantity sufficient to provide an abrasion-resistant layer without interfering with visibility and (2) binder material for said mineral which binder material has the properties of withstanding the subsequent laminating conditions, being compatible with said thermosetting resin, together with said resin being substantially transparent after lamination, said binder material being present in an amount sufficient to bind said abrasion-resistant mineral to the surface of said decorative facing sheet, and the binder/mineral layer in the dry state being permeable to said thermosetting resin;

drying said mixture on said facing sheet at a temperature sufficient to enhance the bonding of said abrasion-resistant mineral by said binder to the surface of said decorative facing sheet, to provide an ultra-thin porous dry layer of said mixture thereon;

impregnating said coated facing sheet with said thermosetting resin;

assembling said resin impregnated and coated facing sheet over said backing layer;

subjecting said assembly to heat and pressure sufficient to effect consolidation of said backing layer and said facing sheet to thereby provide said abrasion-resistant decorative laminate, the improvement comprising

prior to said impregnating step coating either directly said decorative facing sheet or said ultra-thin dry layer of mixture with an ultra-thin wet layer of binder material having the properties of withstanding the subsequent laminating conditions, being compatible with said thermosetting resin, being in the dry state permeable to said thermosetting resin and together with said resin being substantially transparent after lamination; and

drying said wet ultra-thin binder material layer to provide an ultra-thin porous dry binder material layer immediately below or above said ultra-thin dry layer of binder material/mineral mixture.

4,263,082
STORAGE STABLE POLYOLEFIN COMPATIBLE NON-CROSSLINKING SIZE FOR FIBER GLASS STRANDS

Chester S. Temple, McKees Rocks, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 971,455, Dec. 20, 1978, abandoned, which is a division of Ser. No. 935,275, Aug. 21, 1978, abandoned. This application Jan. 29, 1980, Ser. No. 116,420

Int. Cl.³ C09J *5/02*; D02G *3/18*

U.S. Cl. 156—309.3 **11 Claims**

1. A method of forming a composite article comprising bringing together polyolefin polymer and sized glass strand mat and applying pressure wherein said sized glass strand has been impregnated with an aqueous sizing consisting essentially of: the aqueous carrier, coupling agent, surfactant, softener, cis-butenedioic acid stabilizer, modified polypropylene lubricant and a non-crosslinkable vinyl acetate homopolymer film forming polymer.

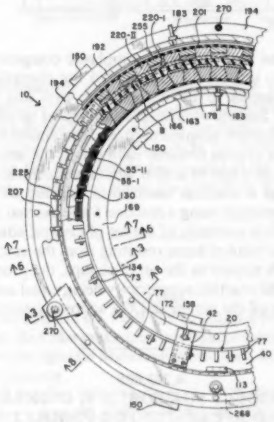
4,263,083
BUILDING AND CURING AN INEXTENSIBLE BELT STRUCTURE FOR A TIRE ASSEMBLY

Robert L. Schleiger, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 20, 1979, Ser. No. 58,977

Int. Cl.³ B29H *17/00*

U.S. Cl. 156—414 **26 Claims**



1. Apparatus for building and curing an inextensible belt structure intended to be used in a pneumatic tire assembly, the apparatus comprising:

a rigid building mandrel for building said belt structure, said mandrel including a pair of end rings and having between said end rings a cylindrical surface and a pattern of circumferential and transverse grooves sunk radially inward from the cylindrical surface for forming the radially inner face of the belt structure, said mandrel comprising:

a multiplicity of pairs of segments disposed to form a rigid hollow cylinder extending axially between and locked to said end rings;

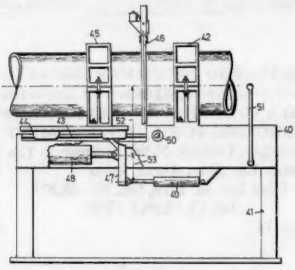
curing means for receiving said mandrel with said belt structure built thereon in an uncured state, said curing means comprising a rigid cylindrical wall, a cylindrical elastomeric diaphragm disposed coaxially of and radially inward of said wall, the axial ends of the diaphragm being secured adjacent to the respectively associated ends of the wall, a first and a second plurality of axially extending arcuately spaced segments disposed for movement radially inwardly of said cylindrical wall in response to movement of said diaphragm, each segment of said second plurality of segments having at least one circumferentially extending portion lapping slidably on the radially inward circumferential surface of the next associated one segment of said first plurality of said segments.

4,263,084

THERMOPLASTIC WELDING

Seppo I. Takala, Verwoerdburg, South Africa, assignor to Impala Plastics (Pty) Limited, Pretoria, South Africa

Filed Jun. 18, 1980, Ser. No. 160,908
Claims priority, application South Africa, Jun. 22, 1979, 79/3109
Int. Cl.[3] B29C *19/00*
U.S. Cl. 156—503 5 Claims



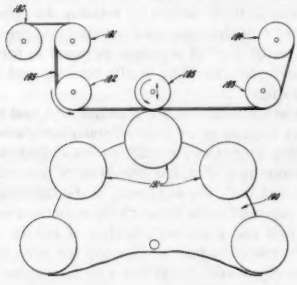
1. A machine for welding thermoplastic components which comprises two sets of clamps adapted for clamping thermoplastic components to be welded, the two sets of clamps adapted to be linearly moveable with respect to one another, an action mechanism adapted to provide an action for pressing the two sets of clamps towards each other, the action being a force exerted on a line of action which is eccentric of the sets of clamps, and a reaction mechanism adapted to provide a reaction, the reaction being a reaction force exerted on a line of reaction which is eccentric of the set of clamps, adapted, so as to balance a moment of force resulting from the eccentricity of the action with respect to the set of clamps, the product of the reaction and the reaction eccentricity being equal and opposite to the product of the action and the action eccentricity.

4,263,085

TAPE PRODUCT FOR FORMING INDICIA, AND PROCESS AND APPARATUS FOR PRODUCING SAME, AND PRODUCTS PRODUCED USING SUCH TAPE PRODUCT

Jon P. Ellis, 14790 Inkster Rd., Redford, Mich. 48239

Continuation-in-part of Ser. No. 919,329, Jun. 26, 1978. This application Feb. 21, 1979, Ser. No. 13,210
Int. Cl.[3] B44C *1/22*
U.S. Cl. 156—542 1 Claim



1. An apparatus for applying indicia-forming masks to articles for forming indicia therein or thereon, comprising:

means for supporting a roll of indicia-outline bearing tape including at least one carrier tape, at least one transfer tape, and a plurality of indicia outline elements disposed therebetween;

said indicia outline elements having an adhesive surface to retain said outline elements to said carrier tape;

said transfer tape having an adhesive surface in contact with a non-adhesive surface of said outline elements;

means for separating said carrier tape from said indicia-outline bearing tape so that said transfer tape supports said indicia outline elements disposed adjacent said transfer tape;

means for supporting a plurality of said articles;

means for sequentially and synchronously positioning one of said articles and one of said indicia outline elements on said transfer tape in juxtaposition to each other; and

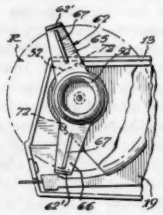
means for pressing said transfer tape against said article so that said indicia outline element adheres to said article forming an indicia-forming mask thereon.

4,263,086

HAND-HELD LABELER

Larry D. Strausburg, Kettering, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jun. 13, 1980, Ser. No. 159,023
Int. Cl.[3] B44C *1/00*
U.S. Cl. 156—542 8 Claims



1. Hand-held apparatus for applying pressure sensitive labels releasably secured to a web of supporting material and including a housing having a handle, the housing having an access opening into which a label roll of said labels can be inserted, means for mounting the label roll in the housing in a position in which a substantial part of a full roll is outside the housing, a delaminator mounted by the housing, an applicator for applying delaminated labels, a driver for advancing the web, means defining a feed path from the label roll, to the delaminator where labels are successively peeled from the web, to the driver, and to a place of exit from the housing, and means for moving the driver to advance the web including a manually engageable actuator disposed at the handle, the improvement wherein the label roll mounting means includes a pair of spaced roll mounting members for rotatably mounting a label roll about an axis, a pair of spaced retainers adjacent the respective roll mounting members, each retainer having arms extending outwardly from the axis to obviate telescoping of the label roll, the arms being spaced to provide ease of insertion of the label onto the mounting members, and means for preventing rotation of the retainers.

4,263,087

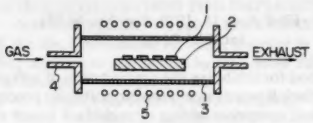
PROCESS FOR PRODUCING EPITAXIAL LAYERS

Kaoru Tanabe, Kawasaki; Yoshifumi Nomura, Ube; Mamoru Maeda, and Mikio Takagi, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Feb. 11, 1980, Ser. No. 120,094
Claims priority, application Japan, Feb. 19, 1979, 54-18121
Int. Cl.[3] C23C *13/00*
U.S. Cl. 156—613 9 Claims

1. An improvement in a process for producing an epitaxial layer comprising the steps of introducing a reaction gas mix-

ture into a reaction vessel in which semiconductor substrates are located and heating said semiconductor substrates by high frequency induction power so that layers grow epitaxially on said semiconductor substrates, the improvement comprising



maintaining the frequency f of the high frequency power at not higher than 50 kHz, and maintaining the pressure P in said reaction vessel in the following range:

$$1333 > P(Pa) \geqq 10^{\left(\frac{2f-34.3}{21}\right)}$$

$$\left(10 > P(Torr) \geqq 10^{\left(\frac{2f-79}{21}\right)}\right)$$

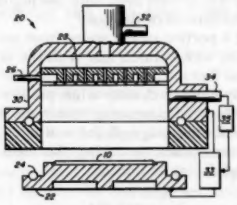
wherein P is the pressure, in respective units of Pa and Torr respectively in the reaction vessel, and f is the frequency in kHz of said high frequency power whereby said epitaxial layer has a density of stacking faults of less than $10/cm^2$.

4,263,088

METHOD FOR PROCESS CONTROL OF A PLASMA REACTION

Georges J. Gorin, Emeryville, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1979, Ser. No. 51,661
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—626 **8 Claims**



7. A process for controlling a plasma reaction in which RF power is supplied to said reaction, said process comprising the steps of: monitoring a parameter which changes in relation to the progress of said reaction; reducing the average power supplied to said reaction in response to a predetermined change in said parameters; continuing said reaction for a predetermined time after reducing the average power; and terminating said reaction after said predetermined time.

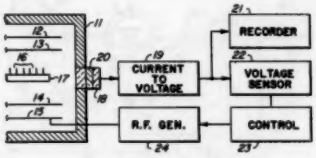
8. A process for controlling the etching reaction of a first layer of material overlying a second layer having an etch rate substantially different from said first layer by selectively controlling the power supplied to said reaction, the process comprising the steps of: monitoring the optical emission emanating from said etching reaction, said emission responsive to the etching of said first layer; detecting a change in said emission, said change indicative that said first layer has been etched through at a first location to expose a portion of said second layer; reducing the average level of said power supplied to said reaction responsive to said change; and completing said reaction at said reduced average level of power.

4,263,089

PLASMA DEVELOPMENT PROCESS CONTROLLER

Jed V. Keller, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 472, Jan. 2, 1979. This application Mar. 10, 1980, Ser. No. 129,145
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—627 **2 Claims**



1. In a process for etching a material with a plasma, said plasma characterized by a decreasing luminosity during the etching and a momentary stability in luminosity when the etch is partially complete, the improvement comprising:

monitoring the variations in luminosity of the plasma;

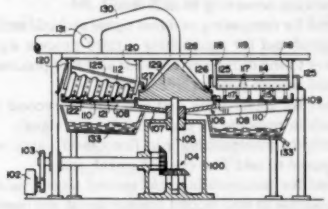
terminating the plasma when the variations first stabilize.

4,263,090

APPARATUS FOR DRYING SLUDGE

Walter Ries, Bad Mergentheim, Fed. Rep. of Germany, assignor to Braunschweigische Maschinenbauanstalt, Brunswick, Fed. Rep. of Germany

Division of Ser. No. 953,191, Oct. 13, 1978. This application Aug. 29, 1979, Ser. No. 70,793
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747506; Aug. 16, 1978, 2835916
Int. Cl.³ B01D *1/14*
U.S. Cl. 159—16 R **47 Claims**

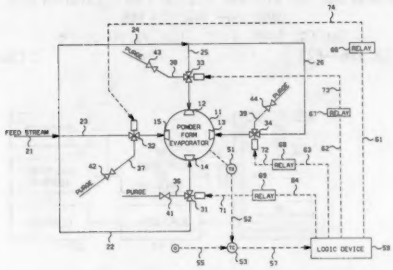


1. An apparatus for drying sludge, comprising sludge support means (110), sludge agitating means (114) operatively arranged relative to said sludge support means (110) for intensively agitating the sludge, drying gas supply means (130, 131) arranged for supplying gas under pressure into contact with said sludge, said sludge agitating means comprising scraper means and roller means for compressing the sludge scraped by said scraper means, said apparatus further comprising means operatively connected to provide a relative motion between said sludge support means and said sludge agitating means.

4,263,091
FLUID FLOW CONTROL

William R. King, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 25, 1980, Ser. No. 115,312
Int. Cl.[3] B01D 1/00
U.S. Cl. 159—44 16 Claims



1. Apparatus comprising:
a vessel;
at least first and second spray nozzles for spraying a fluid into said vessel;
first conduit means for supplying a fluid stream to said first spray nozzle;
second conduit means for supplying a fluid stream to said second spray nozzle;
first on-off valve means operably located in said first conduit means;
second on-off valve means operably located in said second conduit means;
means for establishing a first process signal representative of the actual value of a variable associated with the process occurring in said vessel;
means for establishing a second process signal representative of the desired value of said variable associated with the process occurring in said vessel;
means for comparing said first signal and said second process signal and for establishing a third process signal responsive to the difference between said first process signal and said second process signal;
means for establishing first and process second control signals in response to said third process signal;
means for manipulating said first on-off valve means in response to said first control signal; and
means for manipulating said second on-off valve means in response to said second control signal, the manipulation of said first on-off valve means in response to said first control signal and the manipulation of said second on-off valve means in response to said second control signal providing control of the flow rate of fluid into said vessel so as to maintain said actual value of said variable substantially equal to said desired value of said variable, the maintaining of said first on-off valve means and said second on-off valve means in either an on condition or an off condition providing a substantially maximum pressure drop across said first spray nozzle or said second spray nozzle when fluid is flowing through said first spray nozzle or said second spray nozzle.

4,263,092
METHOD FOR TREATING BLACK LIQUOR USING ACRYLIC ACID POLYMER

Frederick C. Klaessig, Doylestown, Pa., and Donald F. Jacques, Kingwood, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

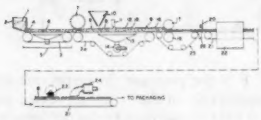
Filed Aug. 16, 1979, Ser. No. 66,952
Int. Cl.[3] P21C 11/00
U.S. Cl. 162—48 11 Claims

1. A method for inhibiting the precipitation of soft scale in a paper mill black liquor system prone to soft scale precipitation, which method comprises adding to said black liquor an effective amount of water-soluble polyacrylic acid.

4,263,093
METHOD FOR RETAINING TEXTURED SURFACE OF PRESSED CEILING BOARD

Jay D. Shenk, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Sep. 20, 1979, Ser. No. 77,305
Int. Cl.[3] D21H 5/02
U.S. Cl. 162—109 3 Claims



1. A method for forming a fibrous board of substantially uniform density and having a decorative, randomly textured surface, comprising
(a) forming a water-laid mat of perlite particles and entangled fibers on a foraminous carrier;
(b) creating a decorative textured surface on said water-laid mat while it is still wet by forming voids therein having depths ranging from about 0.10 to 0.300 inch;
(c) depositing a void-filling layer of particulate material onto the textured surface of said mat;
(d) leveling the top surface of the layer of particulate material so that it is at least even with the highest elevation of the textured surface of the mat;
(e) removing a portion of the water from said mat;
(f) pressing the wet-textured mat with the layer of particulate material thereon to consolidate the mat into a board of substantially uniform density while preserving the configuration of the void-containing textured surface produced in the step of sub-paragraph (b); and
(g) in indifferent order, removing the layer of particulate material and drying the board.

4,263,094
POLYESTER-STARCH SIZED PAPER, SIZING COMPOSITION, AND PROCESS THEREFOR

Robert B. Login, and Daniel R. Dutton, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 908,403, May 22, 1978, Pat. No. 4,210,685. This application Jul. 30, 1979, Ser. No. 61,703
Int. Cl.[3] D21D 3/00
U.S. Cl. 162—164 R 7 Claims

1. A surface-sized cellulosic material consisting of a cellulose-derived paper or paperboard surface sized with a combination of a degraded starch or starch derivative and a water-dispersible polyester, said polyester having an average molecular weight of about 4,000 to about 11,000 and a carboxylic acid number of about 5 to about 15, wherein said polyester is the condensation product of a dicarboxylic reactant, a diol or polyoxyalkylene glycol, and a phosphorus acid reactant said polyester in said starch-polyester size is present in a weight ratio of 3 to 300 pounds per ton of paper and said starch is

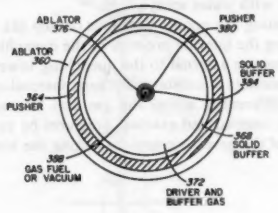
present in said size in a weight ratio of 6 to 600 pounds per ton of paper.

4,263,095

DEVICE AND METHOD FOR IMPLODING A MICROSPHERE WITH A FAST LINER

Lester E. Thode, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 5, 1979, Ser. No. 9,702
Int. Cl.³ G21B 1/00
U.S. Cl. 176—1 **44 Claims**



1. A device for generating energy in the form of radiation and neutrons comprising:

means for generating an annular relativistic electron beam having a voltage of at least 3 MeV, a current density of at least 1 kA/cm^2 and

$$\frac{N\,re}{(1 - v^2/c^2)^{\frac{1}{2}}} \leq 1$$

where N is the line density of the beam, re is the classical electron radius, v is the beam velocity and c is the speed of light.

a target plasma chamber containing a high-density gas;

a fast liner disposed within said target plasma chamber;

a microsphere disposed within said fast liner;

means for ionizing said high-density gas to generate a plasma;

means for initiating convective oscillations in said plasma upon application of said annular relativistic electron beam such that streaming instabilities are produced in said plasma causing electron beam energy to be deposited in a plasma annulus surrounding said fast liner to heat said plasma annulus to kilovolt temperatures and drive an axial current causing said electron beam energy deposited in said plasma annulus to converge on said fast liner and drive said fast liner to generate a shaped energy pulse for imploding a structured microsphere and thereby generated energy in the form of radiation and neutrons means for extracting useful energy in a controlled manner from said microsphere imploded by said liner, said microsphere giving off useful energy in a controlled manner when imploded by said liner.

4,263,096

TOROIDAL MAGNET SYSTEM

Tihiro Ohkawa, La Jolla, Calif., and Charles C. Baker, Naperville, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

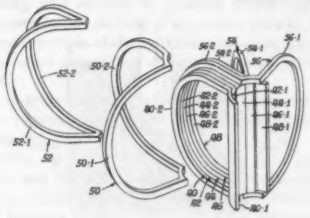
Continuation-in-part of Ser. No. 654,037, Feb. 2, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 864,696
Int. Cl.² G21B 1/00
U.S. Cl. 176—3 **4 Claims**

1. In a device having a toroidal plasma containment vessel with walls confining a toroidal region encircling a central opening through the vessel,

a toroidal coil system for producing a toroidal magnetic field in the vessel, said toroidal coil system comprising

fixed field generating linking coil means comprising at least one linking coil disposed in fixed relation to said vessel with the coil linking the vessel, each linking coil being formed of first and second sections with the first section passing through said central opening through the vessel and the second section completing the linking coil to link the vessel,

a plurality of movable unlinked field correcting coils each



formed of first and second C-shaped sections joined to each other at their open ends with their bights spaced apart,

means for removably mounting the second C-shaped section of each movable coil adjacent said second section of one of said linking coils, with the plasma containment vessel disposed between the open ends of the respective first and second C-shaped sections, with neither C-shaped section passing through said central opening through the plasma containment vessel to link the vessel, and

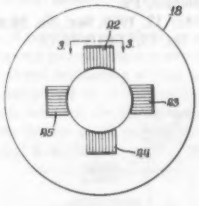
means for passing electric current through said linking and movable coils in opposite sense in the respective adjacent second sections.

4,263,097

METHOD AND APPARATUS FOR DRIVING A CONTINUOUS CURRENT IN A TOROIDAL PLASMA

Tihiro Ohkawa, La Jolla, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed Feb. 23, 1977, Ser. No. 771,114
Int. Cl.² G21B 1/00
U.S. Cl. 176—5 **9 Claims**



1. In apparatus for generating and confining a toroidal plasma comprising means for providing a toroidal magnetic field in a plasma zone, said toroidal field being of increasing strength with decreasing radial distance from the major toroidal axis, and means for generating a plasma in the plasma zone, said plasma having a dynamic trapped particle population of electrons, which reflect back and forth along the minor toroidal axis without contributing to the net toroidal plasma current, the improvement comprising means for asymmetrically altering the trapped electron particle population with respect

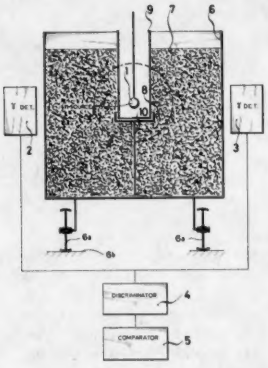
to the minor toroidal axis to produce an ohmic plasma current along the minor toroidal axis.

4,263,098

RADIATION MEASURING PROCESS FOR DETERMINING THE CONCENTRATION OF FAT IN MEATS

Karl Kasperek, Düren, and Peter Glozbach, Jülich, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,819
Int. Cl.³ G01N *33/12, 23/22, 23/222*
U.S. Cl. 176—10 **4 Claims**



1. A method of determining the fat concentration in a mass of meat, said method comprising the steps of:

subjecting said mass of meat to a neutron flux sufficient to induce (n,γ) reactions in the mass of meat and prompt γ emission therefrom;

measuring the induced prompt γ radiation emitted for at least one selected γ energy; and

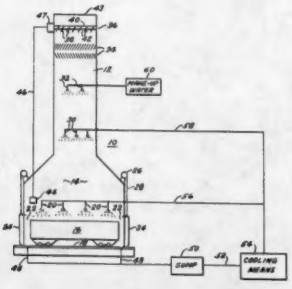
comparing the measured values at said selected γ energy with a standard representing concentration of fat in said mass of meat, thereby obtaining a measurement of said concentration.

4,263,099

WET QUENCHING OF INCANDESCENT COKE

Richard W. Porter, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 17, 1979, Ser. No. 39,937
Int. Cl.³ C01B *39/08*
U.S. Cl. 201—39 **7 Claims**



1. A method for quenching incandescent coke in a quenching tower, a lower portion of which tower defines a quenching chamber, an upper portion which defines a stack and a top opening to exhaust emissions generated in the quenching tower, comprising:

(a) positioning a car containing incandescent coke in the quenching chamber of the quenching tower,

(b) effecting a gas seal to substantially prevent air infiltration into the quenching chamber and up the quenching tower during quenching of the coke,

(c) quenching the coke with water resulting in the generation of quenching emissions which ascend through the tower,

(d) cooling and cleaning the generated emissions in the tower with water sprays,

(e) demisting the cooled emissions of step (d),

(f) sensing the internal pressure of the quenching tower and the pressure external to the quenching tower, and

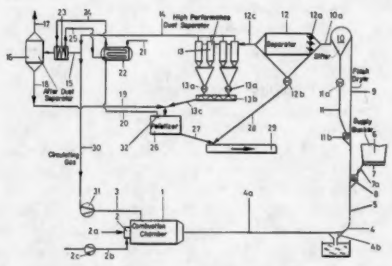
(g) maintaining a substantially zero internal-external pressure differential across the gas seal in response to the sensed internal and external pressures by controlling the flow of the gaseous emissions exiting the tower.

4,263,100

METHOD AND APPARATUS FOR REDUCING FINE DUST EMISSION WHILE CHARGING PREDRIED AND PREHEATED COAL INTO COKE OVENS

Dieter Stalherm, and Janos Bocsanczy, both of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG., Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,199
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842477
Int. Cl.³ C10B *53/04, 53/08*
U.S. Cl. 201—41 **6 Claims**



1. In combination with a process of predrying wet coal, to be charged into a coking chamber, of the type wherein the wet coal is directly contacted with a hot process gas which tranports, predries and preheats the coal, wherein the predried and preheated coal is separated from the gas, and in which the separated coal is then charged into the coking chamber, the improved method of reducing the amount of fine dust in the separated gas as well as fine dust carryover comprising

first separating only 80 to 90 percent of the coal from the gas without separating the fine dust therefrom,

then separating fine dust and the remaining coal from the gas,

then compacting said separated fine dust and the remaining coal to form a compacted material, and

admixing the compacted material with said first separated coal and charging said admixture into the coking chamber.

4,263,101
COKE OVEN DOOR ASSEMBLY

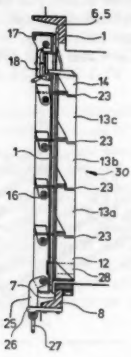
Friedrich Thiersch, Recklinghausen, and August Lucas, Datteln-Horneburg, both of Fed. Rep. of Germany, assignors to Carl Still GmbH & Co. KG., Firma

Filed Apr. 29, 1980, Ser. No. 144,953

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 7913785[U]

Int. Cl.³ C10B *25/06*

U.S. Cl. 202—248 **15 Claims**



1. A coke oven door assembly for closing an opening of a high horizontal coke oven chamber comprising a door frame bordering the opening with a sealing surface, a door body, a sealing membrane mounted on the door body for sealingly engaging the sealing surface of the door frame, a refractory door member mounted on said door body for protecting said door body against that of the hot oven chamber, locking means connected to said frame for engaging said door body for urging the sealing membrane into engagement with said sealing surface, said door body including at least two plates disposed in series, connecting means for tiltingly interconnecting adjacent ones of said plates around a horizontal axis running in the longitudinal direction of the coke oven.

4,263,102
PROCESS FOR THE CONTINUOUS RECOVERY OF THERMALLY UNSTABLE SOLVENT MIXTURES

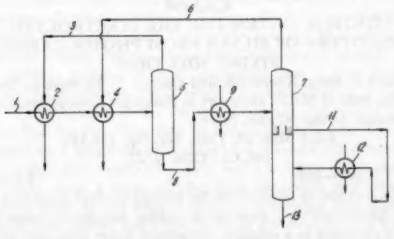
Victor Schorr, Bad Soden, and Gerhard Wirtz, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Edleanu GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 3, 1976, Ser. No. 720,488

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1975, 2539737

Int. Cl.³ B01D *1/26*; C07C *19/02*

U.S. Cl. 203—22 **8 Claims**



1. A process for continuously recovering a multi-component solvent, while substantially preventing the thermal decomposition of the thermally unstable and lowest boiling solvent component, methylene chloride (dichloromethane), of said multi-component solvent, from a mixture comprising a multi-component solvent and dewaxed mineral oil, said multi-component solvent consisting essentially of methylene chloride (dichloromethane) and dichloroethane (1,2-dichloroethane) and wherein the recovery and separation is effected by evaporating said mixture in a multiplicity of evaporators connected in series with solvent components recovered as vaporous products and bottoms products recovered as liquid products from the evaporators, the improvement which comprises:

(a) heating said mixture comprising methylene chloride, dichloroethane and dewaxed mineral oil,

(b) evaporating said mixture to produce a first vaporous product comprising a portion of any water present in said mixture and a portion of the methylene chloride and a first bottoms product comprising the unevaporated portion of said mixture,

(c) heating said first bottoms product to a temperature at which the thermal decomposition of the methylene chloride is minimal,

(d) evaporating said first bottoms product at a pressure higher than step (b) to produce a second vaporous product comprising a major portion of the methylene chloride and a second bottoms product comprising the unevaporated portion of said first bottoms product,

(e) heating said second bottoms product to a temperature sufficient to effect the evaporation of the solvent remaining in said second bottoms product at substantially the same pressure of step (d),

(f) evaporating said second bottoms product at substantially the same pressure of step (d) to produce a third vaporous product comprising substantially all the solvent remaining in said second bottoms product and a third bottoms product comprising said dewaxed mineral oil, and

(g) recovering as products:

the first vaporous product,

the mixture of the second and

the third vaporous products, and the third bottoms product.

4,263,103
PROCESS FOR THERMALLY STABILIZING STEROLS BY DEGASSING AND FLASH DISTILLING

Ralph F. Johnson, Crystal, and Jimmy A. De Mars, Blaine, both of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Division of Ser. No. 810,552, Jun. 24, 1977, Pat. No. 4,198,276. This application Dec. 10, 1979, Ser. No. 101,410

Int. Cl.³ B01D *3/06*; C07J *9/00*

U.S. Cl. 203—88 **9 Claims**

1. The process of purifying sterols from a sterol containing source material having present therein sterols and ferric chloride wherein the sterol containing source material is first degassed and then subjected to flash distillation to yield as a distillate the sterols wherein the sterols are in about the same relative proportion to one another as in the sterol containing source material, and a residue containing the ferric chloride.

4,263,104
ELECTROCHEMICAL MONITORING

Albert A. Diggens, Weston, and James W. Ross, Jr., Cambridge, both of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Nov. 13, 1979, Ser. No. 93,258

Int. Cl.³ G01N *27/46*

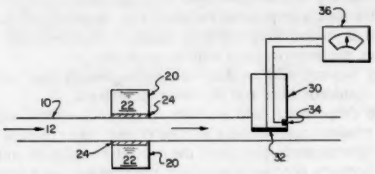
U.S. Cl. 204—1 T **5 Claims**

1. An improved pH independent method for monitoring of a sample stream for the total concentration of a series of ionic species of the form X^{-n}, H_mX^{-n+m}, where m varies from 1 to n and X^{-n} is an anion selected from the group consisting of

fluoride ion F^-, and sulfide ion S^{-2}, said method comprising the steps of:

adjusting or maintaining the pH of the sample stream to a value below the pk_a of the neutral most protonated species of the series;

placing only a first electrode and a second electrode in the adjusted stream such that the electrodes are in direct



contact with the adjusted stream, said first electrode being sensitive to the activity of X^{-n} and said second electrode being sensitive to the activity of hydrogen ion H^+; and

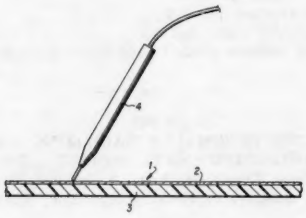
measuring the potential difference developed between the first and second electrode, said difference indicating the total concentration of the series in the stream.

4,263,105

ELECTROSENSITIVE RECORDING MATERIAL AND PROCESS

Jean J. Robillard, Ferney Voltaire; Claude R. Riou, and Christian Nodin, both of Gex, all of France, assignors to ISSEC SA, Ferney Voltaire, France

Filed Aug. 21, 1979, Ser. No. 68,447
Int. Cl.[3] B41M *5/20*
U.S. Cl. 204—2 **19 Claims**



1. An electrosensitive coating upon which information can be permanently recorded by injection into the coating of electrons according to an electric information signal, said coating comprising uniformly dispersed in a binder, a semiconductor oxide with surface defects capable of forming color centers, a salt selected from the group consisting of bismuth salt and antimony salts, and an agent capable of forming a weak complex with said salt,

said salt capable of combining with the surface defects of said semiconductor oxide in the presence of the complexing agent to form electron trapping centers which will produce color centers upon injection into such coating of electrons from a writing electrode or stylus.

4,263,106

SOLDER PLATING PROCESS

Paul A. Kohl, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 31, 1979, Ser. No. 108,963
Int. Cl.[3] C25D *3/32, 3/36, 3/60*
U.S. Cl. 204—43 S **17 Claims**

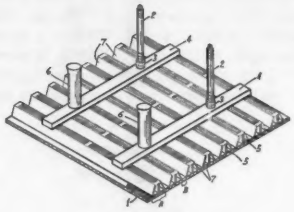
1. A process for electroplating alloys of tin and lead comprising the step of passing current through an anode, aqueous acidic plating solution and cathode characterized in that the aqueous acidic plating bath comprises an heterocyclic additive consisting essentially of at least one organic compound selected from the group consisting of lactones, lactams, cyclic sulfate esters, cyclic imides and cyclic oxazolinones with at least one aromatic ring and up to 100 carbon atoms.

4,263,107

ELECTROLYTIC APPARATUS AND PROCESS

Alberto Pellegri, Luino, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 94,962, Nov. 16, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 140,137
Claims priority, application Italy, May 3, 1979, 22318 A/79
Int. Cl.[3] C25B *1/40, 9/00, 11/03*
U.S. Cl. 204—99 **11 Claims**



1. A method of generating, in an electrolysis cell wherein gas evolution takes place at one electrode, multiple recirculation motions of the electrolyte to and from the interelectrodic gap defined by a substantially horizontal planar cooperating electrode and by a substantially planar foraminous, gas evolving electrode, parallel to and suspended a distance over the cooperating electrode surface, and immersed in a pool of electrolyte, comprising providing over the substantially planar foraminous gas evolving electrode a multiplicity of baffles uniformly distributed over the entire surface of the foraminous electrode, alternately slanting the baffles one way and the opposite with respect to the vertical axis, the lower edges of said baffles, adjacent to the upper surface of the substantially planar foraminous electrode, dividing the electrode surface into an alternate series of areas intercepting between all pairs of upward converging surfaces of oppositely slanted adjacent baffles the gas bubbles evolved over the relative areas intercepted on the foraminous electrode and flowing upward through the said converging surfaces the electrolyte contained therein by the gas-lift effect of the gas bubbles dispersed therein and flowing downward, between all pairs of upward diverging surfaces of oppositely slanted adjacent baffles the electrolyte contained therein through the relative areas, on the foraminous electrode, adjacent to said first areas by induction of the upward, gas-lift generated, motion of the electrolyte between the adjacent upward converging surfaces.

4,263,108

CONTROL SYSTEM FOR THE ELECTROLYTIC RECOVERY OF SILVER FROM PHOTOGRAPHIC FIXING SOLUTION

Bernard J. Berg, Kentwood, and Darrell T. Thompson, Grandville, both of Mich., assignors to Foresight Enterprises, Incorporated, Grand Rapids, Mich.

Filed Mar. 27, 1980, Ser. No. 134,197
Int. Cl.[3] C25C *1/22*
U.S. Cl. 204—109 **5 Claims**

1. A method fo controlling the plating current of an electrolytic silver-recovery process including placing cathode and anode elements in a solution containing silver ions, and applying a current through said solution via said elements as a function of the concentration of silver ions in said solution, wherein the improvement comprises:

repeatedly sampling the residual cell voltage in said solution at periods when the exterior applied voltage is substantially zero, and obtaining a voltage pulse under this condition; and

controlling said current as a function of said pulses.

4,263,109

PRECIPITATION OF CHLORIDE FROM ZINC SULPHATE SOLUTION

Godefridus M. S ..nkels, Rossland; Horst E. Hirsch, Trail; Michael J. Fairweather, and Ernest G. Parker, both of Rossland, all of Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Mar. 31, 1980, Ser. No. 135,588
Int. Cl.³ C25C *1/16*
U.S. Cl. 204—119 **9 Claims**

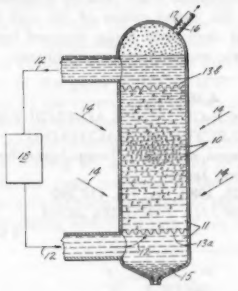
1. A process for the removal of chloride impurity from zinc sulphate solution comprising the steps of forming a slurry of said solution with an inert particulate support material having elemental silver dispersed thereon, and an oxidizing agent; agitating said slurry at a temperature between about 60° and about 100° C. for precipitation of silver chloride on said support material; filtering said slurry to separate purified zinc sulphate solution from the support material containing the precipitated silver chloride; and treating said separated support material containing precipitated silver chloride with a reductant in an aqueous alkaline medium to regenerate elemental silver on said support material.

4,263,110

HYDROGEN-BROMINE GENERATION UTILIZING SEMICONDUCTING PLATELETS SUSPENDED IN A VERTICALLY FLOWING ELECTROLYTE SOLUTION

Russell G. Meyerand, Jr., Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,252
Int. Cl.³ C25B *1/02, 1/24*
U.S. Cl. 204—128 **6 Claims**



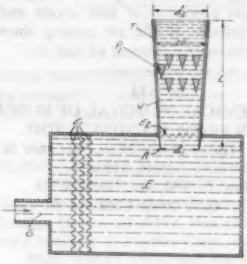
1. A process for producing hydrogen gas and bromine liquid from an electrolyte solution comprising suspending a plurality of semiconducting platelets in a vertically flowing solution of bromide electrolyte, said electrolyte flowing in a vertically disposed radiant energy transparent cylindrical conduit and the platelets suspended in a designated area in said conduit defined by upper and lower nonconductive screens, the location of the platelets in the vertically flowing electrolyte being controlled by the flow rate of the electrolyte, the platelets comprising a single ohmic contact layer sandwiched between an n-doped semiconducting layer and a p-doped semiconducting layer, with a layer of electrical insulation covering the exposed edge of the ohmic contact, impinging said platelets with radiant energy sufficient to cause the evolution of hydrogen gas at the surface of the p-doped semiconducting layer and bromine liquid at the surface of the n-doped semiconducting layer, and collecting the hydrogen and bromine so produced.

4,263,111

HYDROGEN GENERATION UTILIZING SEMICONDUCTING PLATELETS SUSPENDED IN A DIVERGENT VERTICALLY FLOWING ELECTROLYTE SOLUTION

Richard M. Hooper, Vernon, and Russell G. Meyerand, Jr., Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,251
Int. Cl.³ C25B *1/04*
U.S. Cl. 204—129 **6 Claims**



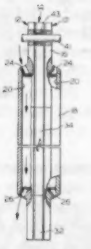
1. A process for producing hydrogen gas from an electrolyte solution, comprising suspending in substantially static position a plurality of semiconducting platelets in a vertically flowing electrolyte solution of relatively constant flow contained in a radiant energy transparent divergent fluid conduit, the location of the platelets in the conduit being controlled by the flow rate of the electrolyte, the platelets comprising an ohmic contact sandwiched between an n-doped semiconducting layer and a p-doped semiconducting layer, with a layer of electrical insulation covering the exposed edge of the ohmic contact, impinging said platelets with radiant energy sufficient to cause the evolution of hydrogen gas at the surface of the p-doped semiconducting layer and collecting the hydrogen so produced.

4,263,112

CELL AND METHOD FOR ELECTROLYSIS OF WATER AND ANODE THEREFOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and John R. Aylward, Vernon, Conn.

Filed Jun. 20, 1980, Ser. No. 161,255
Int. Cl.³ C25B *1/08, 1/10, 9/00, 11/08*
U.S. Cl. 204—129 **20 Claims**



1. In a method for the electrolysis of water vapor in air, the steps comprising:

A. forming an anode by sintering on the surface of a foraminous metal base member a mixture of 65–85 weight percent iridium oxide and 15–35 weight percent of a high temperature resin binder to form a coating bonded to at least one face and at least a portion of the surfaces of the pores of said base member;

B. assembling an electrolytic cell comprising said anode, a cathode and an intermediate matrix member containing electrolyte and providing a conductive path therethrough;

C. applying a potential across said anode and cathode; and

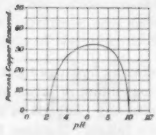
D. passing into contact with the outer surface of said anode a stream of air containing water vapor, said water vapor contacting said coating of said anode and being electrolytically converted to hydrogen ions and oxygen, said hydrogen ions passing through said matrix member to said cathode where hydrogen gas is formed therefrom, said oxygen gas produced at said anode and passing outwardly therefrom in the air passing through said cell to enrich the oxygen content of said air.

4,263,113

ELECTROCHEMICAL REMOVAL OF SURFACE COPPER FROM ALUMINUM FOIL

Walter J. Bernard, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jun. 2, 1980, Ser. No. 155,728
Int. Cl.³ C25F *5/00*; C25D *11/10*
U.S. Cl. 204—146 **7 Claims**



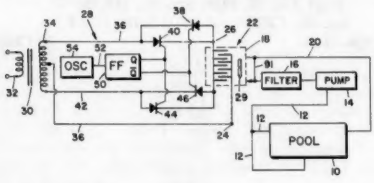
1. A process for electrochemically removing surface copper from aluminum foil comprises etching said foil and then subjecting said etched foil to a low-voltage anodization for up to 15 min and up to 100° C. temperature in an electrolytic bath containing up to 5 wt % sodium potassium tartrate or ammonium dihydrogen phosphate.

4,263,114

METHODS FOR THE TREATMENT OF WATER

Herman A. Shindell, 1081 N. Shepard St., Anaheim, Calif. 92806

Filed Aug. 14, 1978, Ser. No. 933,163
Int. Cl.³ C02F *1/46*
U.S. Cl. 204—149 **5 Claims**



1. In the water treatment method wherein water is made to flow between pairs of electrically charged electrodes the improvement which comprises the steps of:

deriving electrical energy from an alternating power source in which alternations occur at a frequency in the range from 48 to 62 cycles per second;

applying that energy to said electrodes to develop an electric field in the region between said pairs of electrodes;

rectifying said energy prior to its application across said electrodes whereby unidirectional energy is applied to said electrodes;

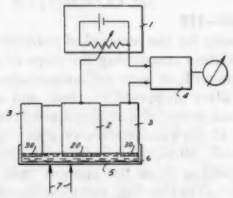
reversing the polarity of the energy applied across said electrodes at a frequency not greater than half the frequency of alternation of the energy from said source, said water being flowed past said electrodes at a rate such that each quantity of water flowing between pairs of said plates is subjected to an electric field reversal while flowing therebetween.

4,263,115

ION-SELECTIVE ELECTRODE DEVICE FOR POLAROGRAPHIC MEASUREMENT OF OXYGEN

Manfred Kessler, and Jens Höper, both of Dortmund, Fed. Rep. of Germany, assignors to Max Planck Gesellschaft zur Förderung der Wissenschaften, Göttingen, Fed. Rep. of Germany

Filed Jul. 3, 1978, Ser. No. 921,259
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—195 P **12 Claims**



1. An ion-selective electrode device for measuring oxygen concentrations comprising

a source of potential voltage;

a reduction electrode for the oxygen composed of a noble metal and connected to said voltage source;

a reference electrode annularly disposed about said reduction electrode;

a ligand membrane provided in front of the reduction electrode, the said ligand membrane containing a cation-selective carrier and being permeable to hydrogen ions;

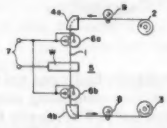
a closure membrane to seal the said electrodes against the outside space, the closure membrane being permeable to oxygen and impermeable to water, and an aqueous electrolyte containing the ligand cation of the said ligand membrane, the said electrolyte being disposed between said ligand membrane and said closure membrane.

4,263,116

ELECTRODE HOLDER-GUIDANCE ASSEMBLY FOR WIRE-CUT ELECTRICAL MACHINING

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawa, Japan

Filed Jan. 25, 1980, Ser. No. 115,390
Int. Cl.³ B23P *1/12, 1/02*; B23K *28/00*
U.S. Cl. 204—224 M **6 Claims**



2. In an electrical machining apparatus, in combination:

a source of an elongated wire electrode adapted to be withdrawn from said source;

a pair of electrode guides flanking a location at which a workpiece can be positioned for electrical machining by said electrode in the presence of a machining liquid, each of said electrode guides comprising a pair of coplanar wheels, a first of the wheels of each pair being formed with a peripheral recess receiving said wire electrode, the second wheel of each pair penetrating into said recess;

means for urging the wheels of each pair toward one another to press said wire electrode into the respective recesses;

takeup means receiving the wire electrode after the wire electrode has traversed said guides; and

means for connecting at least one of said guides to an electrical-machining current source.

4,263,117
DEVICE FOR THE RECOVERY OF GASES FORMED DURING THE ELECTROLYSIS OF ALKALI METAL CHLORIDES

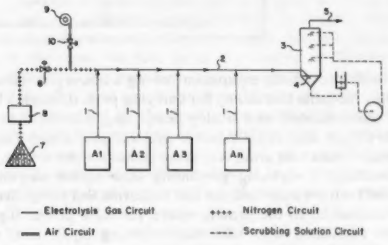
Jean-Louis Pignan, Grenoble, and Georges Cusset, Francheville, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 8, 1979, Ser. No. 92,337

Claims priority, application France, Nov. 14, 1978, 78 32090

Int. Cl.³ C25B *15/02, 1/24, 9/00, 1/02*

U.S. Cl. 204—230 **3 Claims**



1. A device for the recovery of potentially explosive gases formed in the electrolytic cells during the electrolysis of alkali metal chlorides to form alkali metal chlorates, said gases comprising hydrogen, oxygen and chlorine, which comprises a current generator for supplying current to the cells, means for providing pressure in the cells, means for removing the gases formed during electrolysis to chlorine scrubbing columns to remove the chlorine gas, means for recovering the hydrogen gas, means comprising a hydraulic pressure guard in said scrubber columns to maintain the pressure in the cells during transfer of the gases to the scrubber, means automatically operated by the current generator to automatically purge the cells with an inert gas upon interruption of the current, and means automatically operated by sensing the amperage of the cells for forcing air into the cells in a sufficient amount to maintain the gases contained in the cells in a non-explosive mixture with air upon reduction of the operating amperage of the cells during which the rate of gas flow remains low.

4,263,118
DISINFECTION DEVICE

August K. Reis, Faistenbergerstr. 1, 8000 München 90, Fed. Rep. of Germany; Norbert L. Kirmaier, Aschheim, and Meinolf H. A. Schöberl, Prien, both of Fed. Rep. of Germany, assignors to August K. Reis, Munich, Fed. Rep. of Germany

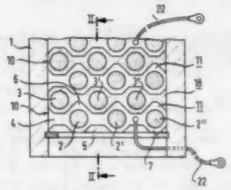
Filed Feb. 1, 1980, Ser. No. 117,811

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929043

Int. Cl.³ C25B *9/02, 11/03, 11/04*

U.S. Cl. 204—242 **5 Claims**

1. A disinfection device comprising a housing defined by walls, and a plurality of electrodes arranged in planes, conductive carrier elements supporting and electrically interconnecting the elements of the planes at one end, non-conductive carrier elements supporting the elements of the plane at the other end, the conductive and non-conductive carrier elements being alternately provided along opposed walls of the housing, the edges of the conductive carrier elements having projecting zones with sides at an angle to the plane of the corresponding electrodes, the edges of the non-conductive carrier elements



having recesses which correspond to and receive the projections on the conductive carrier elements.

4,263,119
ANODE ELEMENTS FOR MONOPOLAR FILTER PRESS ELECTROLYSIS CELLS

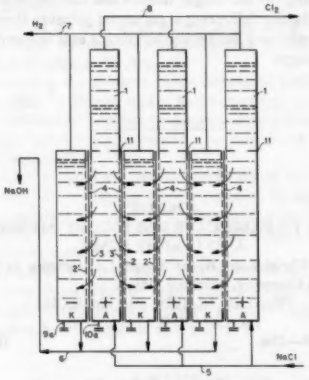
Luciano Mose, Dortmund; Helmut Schurig, Holzwickede, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 17, 1979, Ser. No. 39,988

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821978

Int. Cl.³ C25B *9/00, 11/03, 15/08*

U.S. Cl. 204—257 **3 Claims**



1. In a filter-press type chlor-alkali diaphragm cell anode, the improvement comprising an elongated hollow extension of said anode, said hollow extension being adapted to permit continuous fluid contact with said anode and having a sufficient vertical elongation substantially contiguous with the anode frame to provide additional liquid capacity above the normal liquid level in said anode for optimal liquid flow through the diaphragm.

4,263,120
ELECTROLYTIC CELL FOR THE RECOVERY OF NONFERROUS METALS AND IMPROVED ANODE THEREFOR

Gerhard Berndt, Seevetal; Adalbert Bartsch, Marxen, and Olaf Kölln, Hamburg, all of Fed. Rep. of Germany, assignors to Norddeutsche Affinerie, Hamburg, Fed. Rep. of Germany

Filed Oct. 25, 1979, Ser. No. 88,123

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846692

Int. Cl.³ C25C *7/00, 7/02*

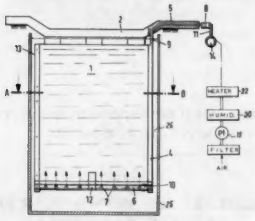
U.S. Cl. 204—273 **10 Claims**

1. An anode for the electrodeposition of a nonferrous metal

from solution in an electrolyte and adapted to be disposed in an upright position in an electrodeposition cell, said anode comprising:

a hanger;

a conductive plate suspended from said hanger and adapted to form an anode surface, said plate having a lower edge;



a gas-permeable tube removably fixed along the lower edge of said plate and extending over the entire length of said lower edge; and

a gas feeder fixed along an upright edge of said plate while extending the full height thereof and communicating with said tube for delivering a gas under pressure thereto, said plate, tube and gas feeder forming a unit suspended from said hanger.

4,263,121

METHOD TO FABRICATE POLYMERIC MEMBRANES AND DIAPHRAGMS

Marvin M. Christensen, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 10, 1979, Ser. No. 83,442

Int. Cl.³ C25B *13/08, 9/00*

U.S. Cl. 204—296 **10 Claims**

1. A method to fabricate a polymeric membrane or polymeric diaphragm for an electrolytic cell to produce a halogen and an alkali metal hydroxide from an aqueous alkali metal halide solution comprising:

(a) placing a fusible substance on at least one surface portion of the polymeric material at or near at least one edge of the polymeric material, the fusible substance being more readily fusible than the polymeric material;

(b) contacting the fusible substance with the same or a different polymeric material so as to form a configuration suitable to encase the working portion of an electrode for an electrolytic diaphragm cell;

(c) heating the fusible substance sufficiently to form a substantially leak-free bond between the polymeric material and the fusible material.

4,263,122

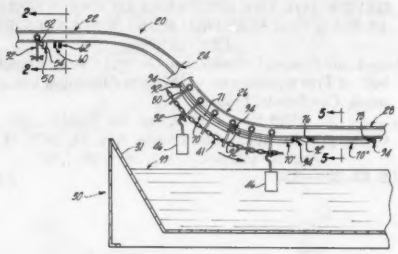
ELECTROCOATING EQUIPMENT

Thomas N. Urquhart, Troy, Mich., assignor to Programmed Coating Systems, Inc., Farmington Hills, Mich.

Filed Dec. 3, 1979, Ser. No. 99,650

Int. Cl.³ B65G *49/02*

U.S. Cl. 204—300 EC **26 Claims**



1. In electrocoating equipment having a conveyor rail with a trolley movable therealong for carrying parts through a bath to be electrocoated, said trolley comprising wheels, arms dependent from said wheels below said rail and a part carrier suspended from said arms, and drive means for the trolley, the improvement comprising grounding shoe means suspended from said rail between said rail and said arms and being electrically connected to the ground return side of a power supply system associated with said electrocoating equipment, said grounding shoe means being disposed in sliding electrical contact with at least one of said arms of said trolley and extending along the path of travel thereof while the same is transitting the electrocoating bath of said equipment, said grounding shoe means being yieldably biased into such contact with said arm and having at least a limited degree of vertical movement relative to said rail to accommodate like movement of the trolley arm during its transit of said grounding shoe means.

4,263,123

ANIONIC GRAFTS OF MONOMERS ONTO COAL SUBSTRATES

Lawrence B. Ebert, New Providence, and Louis Matty, Jr., East Brunswick, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 1, 1978, Ser. No. 901,602

Int. Cl.³ C10G *1/04;* **C08L** *95/00*

U.S. Cl. 208—8 LE **21 Claims**

1. A process for grafting polymeric side chains onto coal which comprises contacting coal with a covalently bonded lithium initiator to generate carbon-lithium bonds and reacting said bonds with an olefinically unsaturated monomer for a time sufficient to produce the grafted coal product having polymeric side chains bonded to said coal.

4,263,124

PROCESS FOR MINIMIZING SOLIDS CONTAMINATION OF LIQUIDS FROM COAL PYROLYSIS

Gary H. Wickstrom, Yorba Linda; Everett W. Knell, Los Alamitos; Benjamin W. Shaw, Costa Mesa, and Yue G. Wang, West Covina, all of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation of Ser. No. 853,528, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 700,003, Jun. 25, 1976, abandoned. This application Jun. 5, 1979, Ser. No. 45,782

Int. Cl.³ C10G *1/00;* **C10B** *47/00*

U.S. Cl. 208—8 R **34 Claims**

1. A continuous process for recovery of values contained in a solid carbonaceous material by pyrolysis which comprises the steps of:

(a) preparing the solid carbonaceous material for pyrolysis by forming the feed stream comprising solid carbonaceous material particles, by forming the solid carbonaceous material particles having a diameter less than a predetermined size, said predetermined size being from about 75 to about 1000 microns, by the steps of:

(i) initially comminuting the solid carbonaceous material in a comminution stage so that a portion of the comminuted solid carbonaceous material is larger than the predetermined size in diameter to minimize generation of fines;

(ii) separating oversize solid carbonaceous material particles which are larger than the predetermined size from the comminuted solid carbonaceous material for forming an oversize fraction and a feed stream for pyrolysis;

(iii) recycling the separated oversize fraction to the comminution stage for further comminution; and

(iv) separating from the feed stream at least 10% by weight of fines less than about 10 microns in diameter prior to or following separation of the oversize fraction;

(b) subjecting the feed stream, having at least 10% by weight of the fines less than about 10 microns in diameter removed, to pyrolysis by introducing the feed stream and a particulate heat source into a pyrolysis zone maintained at a temperature, by the flow of the particulate heat source through the pyrolysis zone, sufficient to pyrolyze the carbonaceous material particles to form a pyrolysis product stream containing as solids, at least a portion of the particulate heat source and a carbon containing residue of the solid carbonaceous material particles, and a pyrolytic vapor mixture comprising volatilized hydrocarbons;

(c) passing the pyrolysis product stream to a separation zone to separate solids from the pyrolytic vapor mixture and separating the solids from the pyrolytic vapor mixture;

(d) subjecting at least a portion of the separated solids to at least partial oxidation in the presence of a source of oxygen to form the particulate heat source, and recycling the thusly formed particulate heat source to the pyrolysis zone; and

(e) separating and recovering values from the pyrolytic vapor mixture by condensing hydrocarbons therefrom.

4,263,125

PRODUCTION OF SYNTHETIC HYDROCARBON FUELS FROM PEAT

Sanford A. Weil, Chicago; Dharamvir Punwani, Bolingbrook, and William W. Bodle, Deerfield, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Jul. 20, 1979, Ser. No. 59,131

Int. Cl.[3] **C10G** *1/00;* **C07C** *29/16, 27/06;* **C10B** *47/00*

U.S. Cl. 208—8 R **20 Claims**

1. A process for production of synthetic hydrocarbon fuels from peat comprising:

providing wet peat to a fluidized bed peat drier for substantial drying;

passing substantially dry peat from said fluidized bed peat drier to a cocurrent dilute phase hydropyrolysis zone, providing about 5 to about 25 weight percent wet peat, based upon total peat, to the bottom of said cocurrent dilute phase hydropyrolysis zone to increase liquid hydrocarbon yield suitable for gasoline blending feedstock and fuel oil, the mean temperature of said hydropyrolysis zone maintained at about 1000° to about 1400° F.;

passing peat char from said hydropyrolysis zone to a fluidized bed char gasifier zone, introducing steam and oxygen to said char gasifier zone and maintaining a mean temperature of said char gasifier zone of above about 1700° F. and below the sintering temperature of the char, the gases from said char gasifier zone passing directly to said hydropyrolysis zone; and

passing gases and contained vapors from said hydropyrolysis zone through said peat drier providing fluidization for said fluidized bed peat drier and then removing said gases and contained vapors for separation of liquid and gaseous hydrocarbon synthetic fuels.

4,263,126

PREPARATION AND USE OF REACTIVE DISPERSIONS

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 22, 1979, Ser. No. 86,892

Int. Cl.[3] **C10G** *11/05, 47/16*

U.S. Cl. 208—14 **23 Claims**

1. A process for converting a convertible hydrocarbon oil, said process comprising dispersing in said hydrocarbon oil from about 0.02 wt.% to about 10 wt.% of said oil of particles comprising a catalytically active zeolite, said particles having a particle size from less than about 0.01 microns to 250 microns, and said zeolite having a pore size of at least 5 Angstroms and a normal hexane sorption capacity of at least 5 wt.% when exposed at 25° C. to 20 mm vapor pressure of normal hexane, and heating said dispersion at a temperature of about 200° to about 500° C. for from 0.1 to 72 hours to effect said conversion.

4,263,127

WHITE OIL PROCESS

Maurice K. Rausch, South Holland; Daniel B. Eickemeyer, Crete, and Gerald E. Tollefsen, Calumet City, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jan. 7, 1980, Ser. No. 110,432

Int. Cl.[3] **C10G** *65/02, 47/12*

U.S. Cl. 208—58 **28 Claims**

1. A process for preparing a food grade white mineral oil from a mineral hydrocarbon oil feedstock of lubricating oil viscosity, comprising the steps of:

(a) contacting the mineral hydrocarbon oil feedstock with molecular hydrogen under hydrocracking conditions, in the presence of a hydrocracking catalyst to form a hydrocracked oil having increased viscosity index relative to said feedstock;

(b) contacting product hydrocracked oil of lubricating oil viscosity from step (a) with molecular hydrogen under hydrogenation conditions to avoid undue cracking in the presence of a sulfur-resistant, non-precious metal hydrogenation catalyst; and

(c) contacting product hydrocarbon oil of lubricating oil viscosity from step (b) with molecular hydrogen under selective hydrogenation conditions in the presence of a selective hydrogenation catalyst.

4,263,128

UPGRADING PETROLEUM AND RESIDUAL FRACTIONS THEREOF

David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

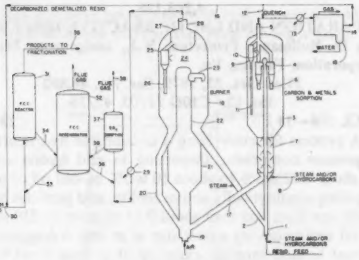
Continuation-in-part of Ser. No. 875,326, Feb. 6, 1978, abandoned, and a continuation-in-part of Ser. No. 38,928, May 14, 1979. This application Nov. 1, 1979, Ser. No. 90,247

Int. Cl.[3] **C10G** *25/08*

U.S. Cl. 208—91 **39 Claims**

1. In a process for preparing premium products from crude petroleum by fractionally distilling the crude petroleum to separate gasoline and distillate gas oil from a residual fraction having a substantial Conradson Carbon number and charging the distillate gas oil to catalytic cracking; the improvement which comprises contacting said residual fraction in a rising confined vertical column with an inert solid material having a microactivity for catalyst cracking not substantially greater than 20 at low severity, including a temperature of at least about 900° F. for a period of time less than two seconds and less than that which induces substantial thermal cracking of said residual fraction, at the end of said period of time separating from said inert solid a decarbonized residual fraction of reduced Conradson Carbon number as compared with said residual fraction, reducing temperature of the said separated

fraction to a level below that at which substantial thermal cracking takes place and adding said decarbonized residual



fraction to said distillate gas oil as additional charge to said catalytic cracking.

4,263,129

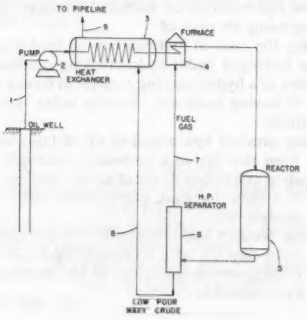
HYDROTREATING/HYDROCRACKING PROCESS WITH LOW ACIDITY CATALYST

Nai Y. Chen, Titusville, and David S. Shihabi, Pennington, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 4, 1979, Ser. No. 71,979

Int. Cl.[3] C10G *11/05, 47/20*

U.S. Cl. 208—111 **19 Claims**



1. A process for converting a high boiling hydrocarbon charge fraction to liquid products of lower boiling range which comprises contacting said charge fraction with a crystalline zeolite characterized by a silica/alumina ratio greater than 12, a constraint index between about 1 and about 12 and an acid activity measured by the alpha scale less than 10, said contacting being conducted at 650° to 850° F., space velocity of 0.1 to 5.0 LHSV and a pressure not less than about 200 psi.

4,263,130

PROCESS FOR CRACKING HYDROCARBONS WITH A CATALYST PASSIVATED WITH AN ANTIMONY TRIS (HYDROCARBYL SULFIDE)

Brent J. Bertus; Dwight L. McKay, and Harold W. Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 926,697, Jul. 25, 1978, Pat. No. 4,190,552. This application Sep. 25, 1979, Ser. No. 78,635

Int. Cl.[3] C10G *9/16, 11/06;* **C07F** *9/90*

U.S. Cl. 208—113 **6 Claims**

1. A process for cracking a hydrocarbon oil employing a cracking catalyst, the effectiveness of which can be reduced by a contaminating metal deposited thereon from said hydrocarbon, which comprises passivating metal on said catalyst whenever it appears by adding to said catalyst an antimony tris (hydrocarbyl sulfide).

4,263,131

PASSIVATION OF METALS CONTAMINATING A CRACKING CATALYST WITH AN ANTIMONY TRIS(DIHYDROCARBYL PHOSPHITE) CATALYST AND PROCESS OF CRACKING THEREWITH

Brent J. Bertus; Dwight L. McKay, and Harold W. Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 926,695, Jul. 25, 1978, Pat. No. 4,209,453. This application Oct. 9, 1979, Ser. No. 82,514

Int. Cl.[3] C10G *11/05, 9/16, 37/14*

U.S. Cl. 208—114 **11 Claims**

1. A method for passivating a hydrocarbon cracking catalyst which comprises adding to said catalyst at least one antimony tris(dihydrocarbyl phosphite).

4,263,132

CATALYTIC REFORMING AND HYDROCRACKING OF ORGANIC COMPOUNDS EMPLOYING PROMOTED ZINC TITANATE AS THE CATALYTIC AGENT

Lewis E. Drehman, and Floyd E. Farha, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 28, 1980, Ser. No. 125,430

Int. Cl.[3] C10G *35/04, 47/02*

U.S. Cl. 208—134 **30 Claims**

1. A process for the catalytic reforming of a feedstock which contains at least one reformable organic compound comprising the step of contacting said feedstock under suitable reforming conditions with a catalyst composition comprising zinc, titanium and rhenium, in the presence of sufficient added hydrogen to substantially prevent the formation of coke.

16. A process for the catalytic hydrocracking of a feedstock which contains at least one hydrocrackable organic compound comprising the step of contacting said feedstock under suitable hydrocracking conditions with a catalyst composition comprising zinc, titanium and rhenium, in the presence of sufficient added hydrogen to substantially prevent the formation of coke.

4,263,133

CATALYTIC REFORMING AND HYDROCRACKING OF ORGANIC COMPOUNDS EMPLOYING ZINC TITANATE AS THE CATALYTIC AGENT

Lewis E. Drehman; Floyd E. Farha, Jr., and Darrell W. Walker, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 28, 1980, Ser. No. 125,618

Int. Cl.[3] C10G *35/04, 47/02*

U.S. Cl. 208—134 **22 Claims**

1. A process for the catalytic reforming of a feedstock which contains at least one reformable organic compound comprising the step of contacting said feedstock under suitable reforming conditions with a calcined catalyst composition comprising zinc and titanium in the presence of sufficient added hydrogen to substantially prevent the formation of coke, wherein said zinc and said titanium are present in said calcined catalyst composition in the form of zinc titanate which is prepared by calcining a mixture of zinc oxide and titanium dioxide in the presence of free oxygen at a temperature in the range of about 650° C. to about 1050° C.

12. A process for the catalytic hydrocracking of a feedstock which contains at least one hydrocrackable organic compound comprising the step of contacting said feedstock under suitable hydrocracking conditions with a calcined catalyst composition comprising zinc and titanium, in the presence of sufficient added hydrogen to substantially prevent the formation of coke, wherein said zinc and said titanium are present in said calcined catalyst composition in the form of zinc titanate which is prepared by calcining a mixture of zinc oxide and titanium dioxide

in the presence of free oxygen at a temperature in the range of about 650° C. to about 1050° C.

4,263,134

REFORMING CATALYST OF SEPARATE PLATINUM-CONTAINING AND IRIDIUM-CONTAINING PARTICLES

Hans J. Schoennagel, Lawrenceville, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 934,143, Aug. 16, 1978, abandoned. This application Jan. 17, 1980, Ser. No. 112,756

Int. Cl.³ C10G *35/08*

U.S. Cl. 208—139 **20 Claims**

1. A process for reforming a hydrocarbon charge which comprises contacting the same under reforming conditions with a catalyst consisting essentially of a mixture of at least two components, one of said components comprising a minor proportion of platinum on a support and another of said components consisting essentially of a minor proportion of iridium on a separate support.

4,263,135

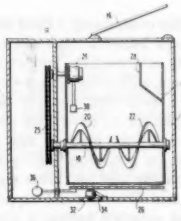
CONTINUOUS AGITATION RAPID OXIDATION METHOD

Henry L. Yeagley, 133 Wilson St., Carlisle, Pa. 17013

Division of Ser. No. 940,233, Sep. 7, 1978. This application Mar. 21, 1979, Ser. No. 22,386

Int. Cl.³ C02F *3/02*

U.S. Cl. 210—612 **3 Claims**



1. A method for aerobically convering organic waste material substantially completely into carbon dioxide and water comprising depositing said waste material into a substantially dry bed of a suitable dispersing agent located in a collecting vessel, initiating and continuously stirring the contents of said collecting vessel, sensing the humidity in said collecting vessel and stopping the stirring when the reaction is complete and the humidity drops below a predetermined level.

4,263,136

PROCESS FOR DEODORIZING AQUEOUS EFFLUENT DERIVED FROM THE MANUFACTURE OF ORGANIC CHEMICALS

George N. Gagliardi, 16 Vanderveer Dr., and Stephen D. Levy, 4 Tower Pl., both of Lawrenceville, N.J. 08648

Filed Apr. 16, 1979, Ser. No. 30,677

Int. Cl.³ C02F *1/72*

U.S. Cl. 210—759 **4 Claims**

1. A method for deodorizing and removing organic chemicals from malodorous aqueous effluent derived from the manufacture of an organic thiophosphate or dithiophosphate, which effluent contains sulfur and organic chemical by-products comprising the step of: adjusting the pH of said aqueous effluent to between pH 1 and pH 4, heating said acidified effluent to between 20° C. and 85° C., treating said heated effluent with sufficient hydrogen peroxide to obtain a positive response to a starch-potassium iodide paper and separating from said effluent the oily residue which forms therein.

4,263,137

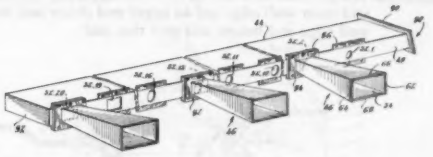
APPARATUS AND METHOD FOR THE GRAVITY SETTLING OF SUSPENDED SOLIDS

Peter Kos, Ridgefield, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation of Ser. No. 926,060, Jul. 18, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,244

Int. Cl.³ B01D *21/24*

U.S. Cl. 210—800 **32 Claims**



1. In a sedimentation apparatus for the gravitational settling of solids suspended in a liquor which is introduced into a tank from a conduit wherein the improvement comprises

a diffuser interposed between the conduit and liquor in the tank to guide liquor into the tank along a feed axis, said diffuser being formed with a wall which encloses the feed axis and diverges outwardly from an inlet to a discharge end, said enclosing wall diverging with a flare angle as measured between opposing segments of the wall wherein the flare angle is less than about 30° and the ratio of the length of the enclosing wall to a predetermined cross-sectional dimension of the inlet is in the range between about 1 and about 40, with the flare angle and said ratio being further so selected to maintain within the diffuser a flow regime which is characterized by a liquor flow without appreciable stall, said flare angle and ratio being further so selected to obtain a diffuser discharge end whose cross-sectional area is sufficiently large to achieve a desired reduction of the velocity of the liquor at the discharge end to enable liquid from the diffuser to pass into the tank with a very low level of turbulence.

23. In a method for settling out suspended solids including flocs and primary particles from a liquor into a gravity sedimentation tank where incoming liquor is supplied through a conduit at a first velocity through a diffuser, the improvement comprising the steps of

reducing the velocity of the incoming liquor by converting its kinetic energy to a potential energy substantially without appreciable stall and floc breaking shear within the diffuser and establish low turbulence prior to the entry of the incoming liquor into the tank and introducing said liquor into the tank at a velocity which is sufficiently low to enable the incoming liquor to disperse into the liquor in the tank with velocity gradients at levels enabling the process of flocculation to dominate over the process of breaking up of flocs throughout the region of said energy conversion and said introduction of the liquor into the tank.

4,263,138

TRAP-TYPE DRAIN FITTING

Bernhard Kessel, Bahnhofstr. 31, 8071 Lenting, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 121,699

Int. Cl.³ E03F *5/06*

U.S. Cl. 210—163 **18 Claims**

1. A trap-type drain comprising:

a base having

a floor,

an annular wall extending upwardly from said floor and having a circularly annular base rim centered on an axis, an annular inner wall having an upper inner-wall edge, forming with said floor a well, and forming with said

floor and said outer wall an annular upwardly open compartment, and

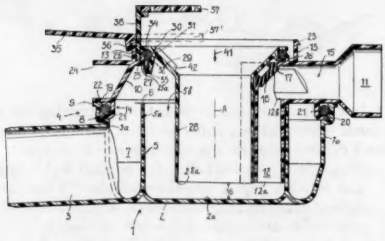
an outlet connection opening through said outer wall into said compartment at a level below said inner-wall edge;

an intermediate part above said compartment and having

a circularly annular part outer edge complementarily interfitting with said base rim for rotation of said intermediate part about said axis,

an annular part rim generally centered on said axis above said part outer edge,

an upright inlet tube having a lower end in said well below said inner-wall edge and an upper end above said inner-wall edge and below said part rim, and



an inlet connection connected to said upper end of said tube and extending horizontally over said base rim between said part rim and said part outer edge;

an insert having

an outer insert edge complementarily interfittable with said part rim, and

a downwardly extending drain tube having a lower end in said well below said inner-wall edge and above said floor; and

means including a bayonet coupling between said part rim and said outer insert edge for sealingly locking said insert to said intermediate part.

4,263,139

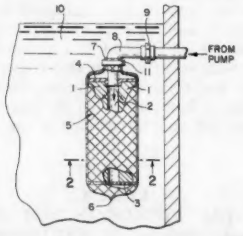
FILTER ELEMENT

Giora Erlich, 200 Winston Dr., Apt. #2920, Cliffside Park, N.J. 07010

Filed May 30, 1979, Ser. No. 43,727

Int. Cl.³ E04H *3/20*

U.S. Cl. 210—169 **4 Claims**



1. An expansible polishing filter in combination with a swimming pool water circulation system; the system comprising a pump; and means to conduct water from the pump to the swimming pool terminating within the pool in the form of a tubular structure having an open end; and the expansible filter comprising a cylindrical pleated element; a first end cap with an opening arranged to surround the open end of the tubular structure to direct the flow to the interior of the element; a second end cap to close the element; and a braided expandible outer support sock disposed on the exterior of the element and removably secured to the tubular structure; said sock being closed at the end adjacent the second end cap and having a multiplicity of interwoven continuous strands, which are movable with respect to each other to permit limited radial expansion and longitudinal reduction thereof when subjected to internal pressure, thereby allowing corresponding radial expansion of the element to open the pleats and expose increased filter area to the flow while restraining the same against bursting and maintaining engagement between the first end cap and the tubular member.

4,263,140

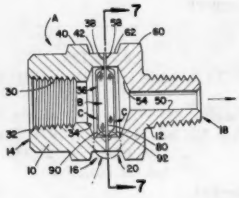
IN-LINE FLUID FILTER

Ronald J. Wujnovich, South Euclid; Earl D. Shufflebarger, Mentor, and William C. Steiss, Parma, all of Ohio, assignors to Nupro Company, Willoughby, Ohio

Filed Apr. 5, 1979, Ser. No. 27,301

Int. Cl.³ B01D *35/02*

U.S. Cl. 210—247 **2 Claims**



1. A filter assembly comprising: a filter body having an axial passage therethrough between opposite body ends, a filter cavity in said body intermediate said ends and being intersected by said passage, a filter element positioned in said cavity across said passage, said filter element having a peripheral flange and being pleated to have fold areas extending outwardly on both sides of the plane of said flange, cup-shaped filter element supports positioned on opposite sides of said filter element and having said fold areas received therein, said filter element and said filter element supports being of metal wire mesh and said supports having a greater porosity than said filter element, said filter element supports having peripheral flanges positioned against opposite sides of said filter element peripheral flange, said filter body including a pair of body sections having end faces between which all of said peripheral flanges are received, and said body sections being fusion welded together at said end faces with said peripheral flanges being fusion welded together and to said end faces.

4,263,141

PROCESS OF PRODUCING GASOLINE FROM SYNTHESIS GAS

Friedrich Möller, Friedrichsdorf; Friedemann Marschner, Oberursel; Emil Supp, Dietzenbach; Walter Boll, Bergen-Enkheim, and Gerhard Cornelius, Karben, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,173

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846693

Int. Cl.³ C07C *1/00, 1/04, 27/06*

U.S. Cl. 260—450 **4 Claims**

1. A process of producing gasoline hydrocarbons (C_{5+}) from a synthesis gas containing mainly carbon oxides and hydrogen, comprising the steps of:

(a) feeding said synthesis gas into a methanol synthesis zone containing a methanol synthesis catalyst and producing a methanol containing product, said catalyst being indirectly cooled by boiling water under a pressure of 15 to 90 bars to maintain its temperature in the range of 200° to 300° C., said water being supplied from a first reservoir to

said methanol synthesis zone and recycled to said first reservoir.

(b) withdrawing steam from said first reservoir,

(c) subjecting the entire methanol containing product of step (a) to a gasoline synthesis stage containing a gasoline synthesis catalyst and producing a gasoline containing product, said gasoline synthesis catalyst being indirectly cooled by a cooling liquid and maintained at a temperature of about 250° to 400° C.,

(d) recycling said cooling liquid through an external heat exchanger zone,

(e) withdrawing heat from said liquid in said heat exchanger zone by means of boiling water under pressure from and recycled to a second reservoir,

(f) feeding fresh water into the first reservoir and feeding part of the boiling water from said first reservoir by a pumping means into said second reservoir, withdrawing steam with a pressure of at least 100 bars from said second reservoir.

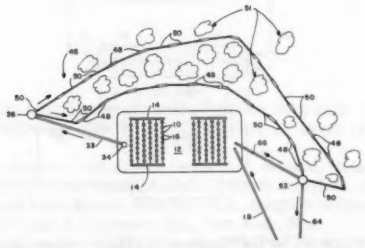
(g) cooling the gasoline containing product of step (c), from said product separating gasoline hydrocarbons and a residual gas comprising carbon oxides, hydrogen, methane and minor amounts of gaseous hydrocarbons of the C_2 to C_4 range, at least a portion of said residual gas being fed together with said synthesis gas into said methanol synthesis zone.

4,263,142

PROCESS AND SYSTEM FOR PURIFYING WATER

R. Edward Burton, Willits, Calif., assignor to Microphor, Inc., Willits, Calif.

Filed Jun. 13, 1979, Ser. No. 48,019
Int. Cl.³ C02F *3/08*
U.S. Cl. 210—608 **18 Claims**



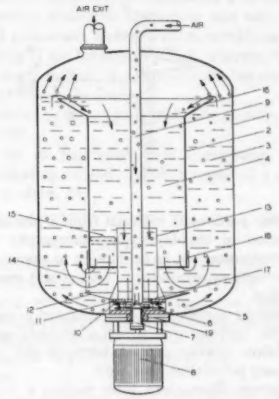
11. A process for reducing the biochemical oxygen demand and suspended solids level in a volume of impure water, comprising causing the water to flow in series through an enclosed treatment circuit comprising a plurality of water containers interconnected by water lines, said containers defining holes through which project bark plugs, said water filling the major portion of said chambers to provide substantial residence time, said enclosed treatment circuit being disposed underground and surrounded by soil, said bark plugs functioning as a means to attract and hold nutrient deposition in the form of colloidal wastes, single-celled bacteria cytoplankton and the like while at the same time providing a safe habitat for minute animal organisms capable of feeding thereupon, resulting in the formation of clarified water, said bark clusters also providing a capillary system for passage of said thus-formed clarified water into the surrounding soil.

4,263,143

PROCESS AND APPARATUS FOR DISPERSING GAS IN A LIQUID

Heinrich Ebner, Bonn; Uwe Faust, Fischbach, and Wolfgang Sittig, Hofheim, all of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,066
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844398
Int. Cl.³ C12M *1/08*
U.S. Cl. 210—629 **4 Claims**



1. A process for dispersing gas in a liquid flowing in a vertical cycle through a first reaction zone and a second reaction zone arranged in parallel within a reactor comprising:

a. filling the reactor with the liquid and flowing a liquid/gas mixture upwards in a first reaction zone due to an air-lift pump effect;

b. degassifying said liquid/gas mixture at an upper transition zone from said first reaction zone to a second reaction zone;

c. flowing the completely or partly degassified liquid down through the second reaction zone;

d. drawing gas into the bottom of said reactor with a dispersing device having a rotor;

e. mixing 5–25% by volume of the total amount of said descending liquid from the lower part of said second reaction zone with said gas drawn in by said dispersing device;

f. centrifuging the gas/liquid mixture at 3–10 m/s into the lower part of said first reaction zone with a diffuser surrounding the rotor of said dispersing device, wherein said gas/liquid mixture exiting from said diffuser is 8–24 part-streams;

g. flowing said centrifuged mixture upwards to contact the main stream of said descending liquid passing from the lower part of said second reaction zone into said first reaction zone.

4,263,144

DEVICE FOR COLLECTING AND TRANSFERRING PARTICULATE MATERIAL

Steven G. Platt, El Sobrante, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 101,983
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—658 **5 Claims**

1. A device for rapidly collecting and transferring a fraction of adsorbent chromatographic particulate material from a

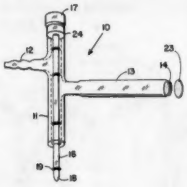
plurality of fractions obtained in thin-layer chromatography without cross contamination, which comprises in combination

(a) a housing, open at both ends,

(b) means affixed to said housing for connecting said housing to a vacuum source,

(c) an appending member affixed to and having fluid-flow communication with said housing,

(d) a porous member fitted into the non-affixed end of said appending member, the diameter of said appending member in (c) and said porous member being small enough to allow spot collection of a fraction of adsorbent chromatographic particulate material from a plurality of fractions obtained in thin-layer chromatography without cross contamination but large enough to minimize the number of collections necessary to collect and transfer all of said fraction,



(e) a plunger member slidably mounted in said housing, the slidable movement of which alternately opens and closes fluid-flow communication between the vacuum source and said porous member, and

(f) a porous filamentary filter having a diameter slightly greater than said porous member and detachably adhering to said porous member by means of said vacuum.

4,263,145

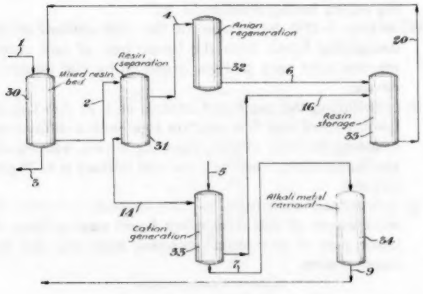
RECOVERY OF AMMONIA OR AMINE FROM A CATION EXCHANGE RESIN

Louis F. Wirth, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 10, 1980, Ser. No. 158,096

Int. Cl.³ B01J *1/04*

U.S. Cl. 210—675 **17 Claims**



1. A method for recovering ammonia or an amine from a strong acid cation exchange resin having both an alkali metal and ammonium or the amine cations attached thereto, said method comprising the steps of:

(a) exchanging the alkali metal and ammonium or amine cations on the strong acid cation resin with alkaline earth metal cations by contacting the resin with an aqueous liquid containing alkaline earth metal cations at conditions sufficient to form an aqueous solution of hydroxides of the alkali metal and ammonia or amine and

(b) subsequently contacting the resulting aqueous solution containing the hydroxides of the alkali metal and ammonia or amine with a cation exchange resin at conditions such that the concentration of the alkali metal in the solution is selectively reduced.

4,263,146

PROCESS FOR REMOVING CATIONIC SUBSTANCES FROM AQUEOUS SOLUTIONS

Hans Wegmüller, Riehen, and Rudolf F. Wurster, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,563

Claims priority, application Switzerland, Jun. 29, 1978, 7098/78

Int. Cl.³ C02F *1/42*

U.S. Cl. 210—679 **17 Claims**

1. A process for removing cationic substances from an aqueous solution, which comprises bringing the solution into contact with a cellulose-containing material which has been chemically modified anionically, the anionic constituent of which is bonded to the cellulose moiety by a grouping of the general formula

$$-O-CH_2-N< \quad (1)$$

wherein the nitrogen atom is part of an amide group of the anionic constituent and the oxygen atom is bonded to the cellulose moiety.

4,263,147

TREATMENT PROCESS

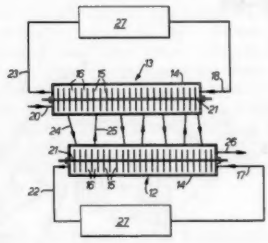
Lee F. Robinson, London, England, assignor to RTL Contactor Holding S.A., Zug, Switzerland

Filed Oct. 10, 1979, Ser. No. 83,270

Claims priority, application United Kingdom, Oct. 13, 1978, 40436/78

Int. Cl.³ B01J *8/10*

U.S. Cl. 210—685 **10 Claims**



1. A process for the treatment of a liquid stream comprising:

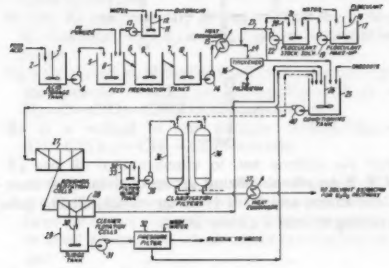
continually passing at least two different reagents respectively through at least a first and second contactor of the type having a drum, through which phases within the contactor pass, a rotor within the drum including a plurality of axially spaced discs dividing the drum interior into a series of compartments, the edges of the discs being spaced from the drun to allow passage of the phases from compartment to compartment and, for each of at least some of the compartments, a plurality of receptacles arranged to rotate with the rotor and designed to receive material of one phase and to discharge it into the other phase as the rotor turns; and

passing the liquid stream along a flow path which includes in succession parts of one of the contactors and parts of the other contactor or contactors, whereby the liquid stream is brought into contact with the reagents successively and in rotation.

4,263,148
PROCESS FOR REMOVING HUMIC MATTER FROM PHOSPHORIC ACID SOLUTIONS

Raymond D. Symens, Lakewood, and Robert S. Rickard, Golden, both of Colo., assignors to Earth Sciences, Inc., Golden, Colo.

Filed Apr. 9, 1979, Ser. No. 28,455
Int. Cl.[3] B03D 1/02; C01B 25/235
U.S. Cl. 210—705 11 Claims



1. A process for removing colloidal and non-colloidal humic matter from an aqueous solution of phosphoric acid, said process consisting essentially of the steps of:

a. treating said solution with an effective amount of a tannin as a flocculating aid and an effective amount of a slightly anionic high molecular weight polyacrylamide flocculant sufficient to form aggregates or flocs of humic matter;

b. further treating said aqueous solution following removal of a majority of the flocs with an effective amount of one or more phenol compounds sufficient to destabilize said colloidal humic matter contained in said solution and aid in forming a froth of said humic matter; and

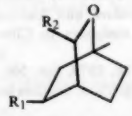
c. then separating said humic matter from said solution by froth flotation.

4,263,149
2-OXABICYCLOOCTANE DERIVATIVES FOR AUGMENTING OR ENHANCING THE FLAVOR OF FOODSTUFFS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099.
This application Jun. 7, 1979, Ser. No. 46,361
Int. Cl.[3] D06M 13/18, 13/16
U.S. Cl. 252—8.9 10 Claims

1. A process for augmenting or enhancing the aroma of a fabric softener comprising the step of placing in intimate contact with a fabric softener base at least one cyclic chemical compound having the structure:



wherein R_1 is selected from the group consisting of hydrogen and methyl and R_2 is C_3–C_5 alkyl and alkenyl.

4,263,150
PHOSPHITE TREATMENT OF PHOSPHORUS ACID SALTS AND COMPOSITIONS PRODUCED THEREBY

Donald L. Clason, Mentor, and Calvin W. Schroeck, Eastlake, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 11, 1979, Ser. No. 47,534
Int. Cl.[3] C10M 1/48, 3/42, 5/24, 7/46
U.S. Cl. 252—32.7 E 22 Claims

1. A method for improving the properties of excess sulfur-containing salts of phosphorus acids of the formula $(RO)_2PSSH$, wherein each R is independently a hydrocarbon-based radical, which comprises contacting said salts or their phosphorus acid precursors under reaction conditions with at least one phosphite of the formula $(R'O)_3P$, wherein each R' is a hydrocarbon-based radical, at a temperature between about 50° and about 200° C.

20. A composition prepared by a method according to any one of claims 1–19.

22. A lubricant or functional fluid comprising a major amount of a lubricating oil and a minor amount of a composition according to claim 20.

4,263,151
OIL SOLUTIONS AND/OR DISPERSIONS OF HYDRATED CHROMIUM OXIDES

William J. Cheng, and Donald M. Leiendecker, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 3, 1979, Ser. No. 63,228
Int. Cl.[3] C07F 11/00; C10M 1/40
U.S. Cl. 252—33 2 Claims

1. A process of preparing oil-soluble and/or dispersible hydrated chromium oxide having a chromium content of up to about 20% which comprises reacting hydrated chromium oxide obtained by the reduction of dichromates, in the presence of a base, a dispersant selected from the group consisting of sulfonic acids of the idealized formula RSO_3H where R is a hydrocarbon moiety having about 10 to 60 carbon atoms and mixtures of said sulfonic acids with a monocarboxylic acid having at least 8 carbon atoms, water and a volatile solvent for a time sufficient to form a solution and/or dispersion thereof and removing the water and solvent therefrom.

4,263,152
PROCESS OF PREPARING MOLYBDENUM COMPLEXES, THE COMPLEXES SO-PRODUCED AND LUBRICANTS CONTAINING SAME

John M. King, San Rafael, and Louis deVries, Greenbrae, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 52,696
Int. Cl.[3] C10M 1/54
U.S. Cl. 252—46.4 17 Claims

1. A process for preparing a molybdenum-containing composition which comprises (1) reacting an acidic molybdenum compound and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, dispersant viscosity index improvers, or mixtures thereof, in the presence of a polar promoter, to form a molybdenum complex wherein from 0.01 to 2 atoms of molybdenum are present per basic nitrogen atom, and the promoter is present in the ratio of 0.01 to 50 moles of said polar promoter per mole of molybdenum; and (2) reacting said complex with a sulfur containing compound, in an amount to provide 0.1 to 4.0 atoms of sulfur per atom of molybdenum, to form a sulfur- and molybdenum-containing composition.

11. The process of claim 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 wherein said polar promoter is water.

13. The product prepared by the process of claim 11.

15. A lubricating oil composition comprising an oil of lubri-

cating viscosity and from 0.05 to 15% by weight of the product of claim **13**.

4,263,153

OXAZOLINE CONTAINING DISPERSANTS STABILIZED AGAINST OXIDATION WITH SULFUR AND FUELS AND LUBRICANTS CONTAINING SAME

Rosemary O'Halloran, Union, and Esther D. Winans, Colonia, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 11, 1979, Ser. No. 83,590
Int. Cl.³ C01M *1/38*
U.S. Cl. 252—475 **9 Claims**

1. A process for improving the oxidation stability of an oxazoline or bis-oxazoline dispersant prepared by the reaction of a hydrocarbyl substituted C_4–C_{10} dicarboxylic acid, anhydride or ester thereof that has at least 50 carbon atoms in the hydrocarbyl group with a 2,2-disubstituted 2-amino-1-alkanol that has from 2 to 3 hydroxy groups and that contains from 4 to 8 total carbon atoms, which process comprises reaction of said dispersant with elemental sulfur or with a sulfur compound selected from the group consisting of carbon disulfide, a sulfide of phosphorus or a phosphosulfurized olefin, said reaction being carried out at about 100° to 300° C. in a mineral oil solution consisting essentially of said mineral oil, said dispersant and said sulfur or sulfur compound to incorporate from about 0.5 wt. % to about 5 wt. % of sulfur into said dispersant.

8. An oil composition comprising a major proportion of a hydrocarbon fuel or hydrocarbon lubricating oil into which has been incorporated from about 0.01 to about 20 wt. % of an improved bis-oxazoline dispersant prepared by the process of claim **1**.

9. In an automatic transmission fluid comprising a major proportion of an oil of lubricating viscosity and conventional automatic transmission fluid additives in amounts sufficient to provide their attendant function, the improvement comprising that the automatic transmission fluid further contains from about 0.1 to about 5 wt. % of the improved bis-oxazoline dispersant prepared by the process of claim **1**.

4,263,154

MULTIFUNCTIONAL THIOCYANATE AMINE SALT ADDITIVE FOR FUELS AND LUBRICATING OILS AND COMPOSITIONS CONTAINING SAID ADDITIVE

Jack Ryer, East Brunswick; Salvatore J. Girgenti, Westfield, and Esther D. Winans, Colonia, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 5, 1979, Ser. No. 91,691
Int. Cl.³ C10M *1/38*; C07C *161/02*
U.S. Cl. 252—47.5 **7 Claims**

1. A hydrocarbon composition comprising a major amount of a liquid hydrocarbon and a minor but at least anti-wear amount of a hydrocarbon-soluble sulfur-nitrogen-containing additive being the equimolar reaction product of a 4-hydroxy-di(C_1–C_4 alkyl) benzyl thiocyanate and an oil soluble primary amine having the structural configuration R-N-H_2 where R represents a C_{12} to C_{24} linear alkyl group or a branched alkylene group containing 12 to 24 total carbons according to the formula (isobutylene)n where n has a value of from 3 to 6.

4,263,155

LUBRICANT COMPOSITION CONTAINING ALKALI METAL BORATE AND STABILIZING OIL-SOLUBLE ACID

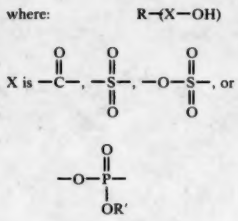
Kenneth Frost, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 7, 1980, Ser. No. 110,415
Int. Cl.³ C10M *1/10, 3/02, 7/02*
U.S. Cl. 252—49.8 **7 Claims**

1. A lubricant composition comprising an oil of lubricating viscosity having dispersed therein:

(a) 0.1 to 60 weight percent of a particulate hydrated alkali metal borate and

(b) 0.01 to 5.0 weight percent of an oil soluble acid of the formula:



and R is an oil-solubilizing group containing at least 4 carbon atoms, and R' is H or an oil-solubilizing group containing at least 4 carbon atoms.

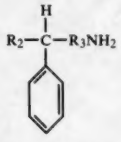
4,263,156

GREASE COMPOSITIONS

Gerard P. Caruso, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1979, Ser. No. 106,301
Int. Cl.³ C10M *5/20, 5/12, 7/32, 7/30*
U.S. Cl. 252—51.5 A **4 Claims**

1. A grease composition comprising a lubricating oil base vehicle and a minor amount of the product obtained by reacting a monoamine (A) having the formula NH_2R_1, wherein R_1 is hydrocarbyl containing 3 to 30 carbon atoms, a monoamine (B) having the formula



wherein R_2 is hydrocarbyl containing 6 through 12 carbon atoms, and R_3 is hydrocarbyl containing 8 through 12 carbon atoms, the amount of (B) being employed, with respect to (A), being from about 5 percent to about 50 percent, by weight, based on the total weight of (A) and (B), with a compound (C) having the formula NH_2—$C_2H_4NH_2$ and a compound (D) having the formula OCN—R_4—NCO, wherein R_4 is hydrocarbylene having from 2 to 30 carbon atoms, the ratio of the total moles of monoamine and the moles of (C) and (D), (A+B):(C):(D), being from about 1.1 to 17:1:2 to 10.

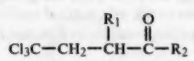
4,263,157

CHLORINATED DERIVATIVES OF BUTYRIC ACID AS USEFUL LUBRICANT ADDITIVES AND LUBRICANTS CONTAINING SAME

Eginhard Steiner, Füllinsdorf, and Andreas Schmidt, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,281
Claims priority, application Switzerland, Apr. 26, 1978, 4504/78
Int. Cl.³ C10M *1/30*
U.S. Cl. 252—54.6 **12 Claims**

1. A compound of the general formula I



(I)

in which

R_1 is chlorine or $—CH_2—CCl_3$, and

R_2 is $—N(R_3)R_4$, $—OH.N(R_3)(R_4)R_5$ or $—OR_6$ wherein

R_3 is C_1–C_{24} alkyl, which can be interrupted once or several times by oxygen,

R_4 and R_5 independently of one another are hydrogen or C_1–C_{24} alkyl, with R_3 and R_4 together having at least 8 C atoms,

R_6 is C_8–C_{20} alkyl, phenyl or C_7–C_{15} alkylphenyl, a group of the formula $—(A)R_7$ or $—CH_2CH_2—N(R_{10})—CH_2CH_2—O—C(O)—CH(R_1)CH_2CCl_3$, wherein

R_7 is a radical of the formula $—(R_8)C(R_9)—O—C(O)—CH(R_1)—CH_2—CCl_3$, wherein

R_8 and R_9 independently of one another are hydrogen, methyl or ethyl, and R_1 has the meaning defined above,

A is a C_1–C_7 alkylene group which is unsubstituted or substituted by one or two radicals R_7 or by one or two methyl or ethyl groups, and which can be interrupted by —O—, and

R_{10} is C_4–C_{20} alkyl.

11. A composition comprising a major proportion of an oil of lubricating viscosity and 0.001 to 5 percent by weight, relative to the composition, of a compound of the formula I according to claim **1**.

12. A method of providing an oil of lubricating viscosity with high-pressure, antiwear and anticorrosive properties which comprises adding thereto 0.001 to 5 percent by weight, relative to the oil, of a compound of the formula I according to claim **1**.

4,263,158

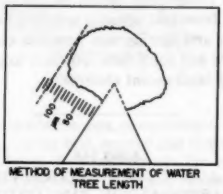
DIELECTRIC COMPOSITIONS STABILIZED AGAINST WATER TREEING WITH ORGANO SILANE COMPOUNDS CONTAINING THE AZOMETHINE GROUP AND PARTIAL CONDENSATION PRODUCTS

Arnold C. Ashcraft, Hightstown, and Robert J. Turbett, Millington, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 60,768, Jul. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 971,817, Dec. 21, 1978, abandoned, which is a continuation of Ser. No. 864,752, Dec. 27, 1977, abandoned. This application Sep. 18, 1979, Ser. No. 76,627

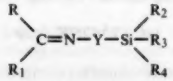
Int. Cl.³ H01B *3/30*

U.S. Cl. 252—573 **11 Claims**



METHOD OF MEASUREMENT OF WATER TREE LENGTH

1. A dielectric composition comprising ethylene polymer and effective amounts, as a water treeing inhibitor, of at least one organo silane of the following formula:



wherein R and R_1 are independently selected from hydrogen, a hydrocarbyl group or substituted hydrocarbyl groups wherein the substituents are hydroxy, halogen, nitro, C_1 to C_8 alkyl, C_1 to C_8 alkoxy; or R and R_1 together with the adjacent carbon atom form a ring of 3 to 7 carbon atoms; R_2 is C_1 to C_8 alkyl, C_1 to C_{18} alkoxy, C_6 to C_{18} aryl, C_1 to C_8 acyloxy, C_6 to C_{18} substituted or unsubstituted aryloxy; R_3 and R_4 are independently selected from C_1 to C_{18} alkoxy, C_6 to C_{18} substituted or unsubstituted aryloxy or C_1 to C_8 acyloxy; Y is C_1 to C_8 alkylene, C_6 to C_{18} substituted or unsubstituted arylene or $—CH_2CH_2NH(CH_2)_3—$

4,263,159

AUTOMATIC TRANSMISSION FLUID COMPRISING ESTERS DERIVED FROM A PARTICULAR MONOCARBOXYLIC ACID COMPOSITION

George Berens, Bardonia, and Milton L. Honig, Bronx, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 889,687, Mar. 24, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 58,969

Int. Cl.³ C10M *3/20*

U.S. Cl. 252—79 **10 Claims**

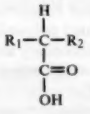
1. An automatic transmission fluid consisting essentially of a base ester fluid which is the substantially completely esterified reaction product of:

(a) trimethylolpropane; with

(b) a monocarboxylic acid composition consisting essentially of:

(i) at least one saturated monocarboyxlic acid of from 3 to 8 carbon atoms, and

(ii) a mixture of saturated monocarboxylic acids of from 11 to 13 carbon atoms containing from about 25% to about 40% each of C_{11}, C_{12}, and C_{13} monocarboxylic acids of which at least about 40% by weight are alpha branched monocarboxylic acid represented by the formula:



wherein R_1, and R_2 are alkyl substituents of from 1 to 10 carbon atom and the sum of the carbon atoms in R_1 and R_2 are from 9 to 11, with the proviso that some of the alpha branching be at the 2 or 3 carbon position;

wherein the molar ratio of (i) to (ii) is from about 0.1:1 to about 0.3:1 and is sufficient to produce an automatic transmission fluid base ester having a pour point no greater than about −40° F.

4,263,160

PROCESS FOR THE PREPARATION OF STABLE DISPERSIONS OF ALKYL PHOSPHATE ESTERS

Suzanne A. Morse, Brandenburg, Ky., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 30, 1979, Ser. No. 34,304

Int. Cl.³ C11D *1/72, 7/36*

U.S. Cl. 252—174.16 **15 Claims**

1. In a method for preparing a storage stable dispersion of an alkyl phosphate ester having an average of about 16 to about 28 carbon atoms in the alkyl radical dispersed in a nonionic surface active agent the improvement which comprises:

(a) heating a blend of an alkyl phosphate ester and a nonionic surface active agent to a temperature sufficient to form a molten blend by liquifying said alkyl phosphate ester, said blend being agitated during said heating; and

(b) rapidly cooling said molten blend to a temperature below the melting point of said alkyl phosphate ester to form a

dispersion, said molten blend being cooled at a rate greater than about 8° C. per hour; and

wherein during said rapid cooling said molten blend is vigorously agitated to a physical state in which various portions of said molten blend are in a highly turbulent and violent flux.

4,263,161

LIQUID FOR WATERPROOFING A MASONRY STRUCTURE

Gottlieb Bartak, Hirschgasse 36, A-4020 Linz, Austria

Continuation-in-part of Ser. No. 965,329, Dec. 1, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 70,313

Claims priority, application Austria, Dec. 1, 1977, 8587/77

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—182 **4 Claims**

1. A liquid for waterproofing a masonry structure, which contains 20% to 50%, by weight, of a diisocyanate and 80% to 50%, by weight, of a solvent mixture consisting of 40% to 60%, by weight, of ethylene glycol monoethyl ether acetate or methylisobutylketone and 60% to 40%, by weight, of toluene.

4,263,162

CYANOETHYLATED POLYAMIDE AMINES AS HARDENERS FOR POLYEPOXIDES

Hans-Josef Buysch, Krefeld; Hermann Gruber, Leverkusen; Wolfgang Wellner, Cologne, and Karl Leiritz, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 10, 1979, Ser. No. 101,752

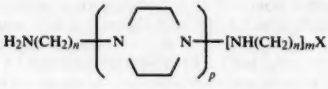
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854436

Int. Cl.³ C08G *59/54*

U.S. Cl. 252—182 **3 Claims**

1. A compositions suitable as a hardener for polyepoxides containing more than one 1,2-epoxide group per molecule comprising a cyanoethylated polyamide amine containing free secondary or primary or secondary and primary amino groups, said cyanoethylated poly-amide amine being the reaction product of polyadded units of

(A) 1 mole of a polyamine corresponding to the formula:



in which p=0, n=2 or 3, m=0 to 6 and X=NH_2, or p=1, n=2 or 3, m=0 and X=H,

(B) from 0.5 to 2.3 moles of a saturated lactam, and

(C) from 0.4 to 2.8 moles of acrylonitrile, methacrylonitrile or mixtures thereof.

4,263,163

PROCESS FOR CALCINING A MATERIAL

Donald R. Ross, Box 430, Umatilla, Oreg. 97882

Filed Apr. 14, 1977, Ser. No. 787,713

Int. Cl.³ G21F *9/14;* **F27B** *14/00*

U.S. Cl. 252—301.1 W **22 Claims**

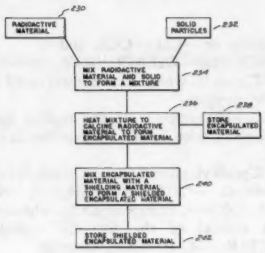
17. A process for calcining a material, said process comprising:

a. mixing said material with a binder to form agglomerated particles;

b. heating said agglomerated particles to calcine said agglomerated particles to fuse part of said agglomerated particles to form a calcined agglomerated particles;

c. said material being selected from the group consisting of clay, diatomaceous earth, ash, natural zeolite, and pumice;

d. said binder comprising radioactive material;



e. contacting said calcined agglomerated particles with a shielding material to form a shielded radioactive calcined agglomerated particle.

4,263,164

METHOD OF PREPARING A LUMINESCENT ALUMINATE

Franciscus J. M. Swinkels; Rudolfus J. C. Bannenberg, and Johannes H. A. Schmitz, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,483

Claims priority, application Netherlands, Sep. 20, 1978, 7809555

Int. Cl.³ C09K *11/46*

U.S. Cl. 252—301.4 R **7 Claims**

1. A method of preparing a luminescent aluminate comprising as a cation at least one metal selected from the group consisting of yttrium and an element selected from those having atomic numbers 57 to 71 inclusive comprising:

(a) forming an aqueous solution of the chloride salts of the component metals of the aluminate.

(b) adding a precipitation agent containing ammonium carbonate or carbon dioxide and ammonia in a quantity ranging from 1 to 3 moles of ammonia per mole of carbon dioxide to said aqueous solution in an amount such that the molar ratio of carbon in the ammonium carbonate or carbon dioxide of the precipitation agent to the sum of the metals of the salts has a value of from 3 to 10 to thereby cause said component metals of said aluminate to co-precipitate from said aqueous solution, and

(c) separating and heating said resultant co-precipitate at a temperature and for a time sufficient to effect the formation of said luminescent aluminate.

4,263,165

BLOWING AGENT COMBINATION COMPRISING AZODICARBONAMIDE, ZINC OXIDE AND A BENZENETHIOL SULPHONIC ACID DERIVATIVE

Ernst Roos, Odenthal; Werner Jeblick, and Helmut Hurnik, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

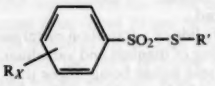
Filed May 7, 1980, Ser. No. 147,588

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2918964

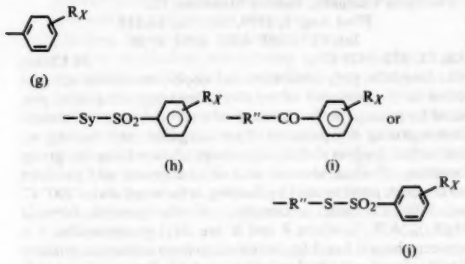
Int. Cl.³ C09K *3/00*

U.S. Cl. 252—350 **2 Claims**

1. A blowing agent combination comprising azodicarbonamide, zinc oxide and a benzenethiol sulphonic acid derivative of the formula



wherein R is at least one member selected from the group consisting of hydrogen, C_1–C_4 alkyl and chlorine; X is a number from 1 to 5 and R' is (a) C_1–C_4 alkyl, (b) C_5–C_6 cycloalkyl, (c) C_7–C_8 aralkyl, (d) one of (a), (b) or (c) substituted by from 1 to 3 C_1–C_4 alkyl moieties, (e) one of (a), (b) or (c) substituted with from 1 to 5 chlorine atoms, (f) one of (a), (b) or (c) substituted by a carboxylic acid—C_1–C_4 alkyl ester radical,



wherein y is a number from 0 to 3 and R'' is C_1–C_6 alkylene, xylylene or xylylene substituted by 1 to 4 members selected from the group consisting of methyl and chlorine, said blowing agent combination containing from 95 to 5 parts by weight of azodicarbonamide and from 5 to 95 parts by weight of a mixture containing 90 to 10% by weight of zinc oxide and from 10 to 90% by weight of said benzenethiol sulfonic acid derivative.

4,263,166

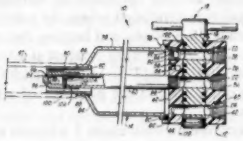
SPRAY FOAM INSULATION GUN

Ladd M. Adams, Norman, Okla., assignor to Entek Corporation, Norman, Okla.

Continuation of Ser. No. 901,245, Apr. 28, 1978, abandoned. This application Oct. 31, 1979, Ser. No. 89,991

Int. Cl.[3] **B01F** *17/00, 3/08;* **B01J** *13/00;* **B05B** *15/02*

U.S. Cl. 252—359 E **25 Claims**



1. A spray foam insulation gun, comprising:

a valve housing, having first, second and third substantially parallel inlet bores disposed therein for connection to supplies of foaming agent, resin and compressed air, respectively, and having a valve bore, disposed therethrough, transverse to and intersecting said inlet bores;

a mixing chamber, connected to said valve housing, for mixing said foaming agent and compressed air to form a foaming agent-compressed air mixture;

a resin nozzle, located downstream of said mixing chamber, for ejecting resin into said foaming agent-compressed air mixture;

first valve means disposed in said valve bore of said valve housing for selectively connecting and disconnecting said first and third inlet bores to said mixing chamber, and said second inlet bore to said resin nozzle;

port means, communicating said third inlet bore, downstream of said first valve means, with said mixing chamber;

a foaming agent outlet communicating said first inlet bore with said mixing chamber; and

means for communicating said second inlet bore with said resin nozzle.

4,263,167

POLY(ALKYLENE OXIDE) COMPOSITIONS

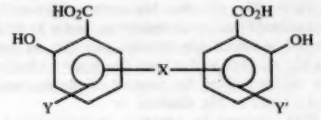
Blake F. Mago, Pocono Pines, Pa., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,536

Int. Cl.[3] **C23F** *11/16, 11/14, 11/12*

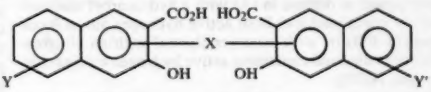
U.S. Cl. 252—391 **18 Claims**

1. A poly(alkylene oxide) composition which exhibits excellent resistance to oxidative degradation and inhibits the corrosion of ferrous metals comprising a poly(alkylene oxide) having incorporated therein an effective amount of a bridged dimer of a hydroxyl-substituted aromatic carboxylic acid and salts thereof of the general formula:



(1)

or



(2)

wherein X is a sulfur atom or a chemically stable group selected from the group consisting of lower alkylene, sulfonyl, and amino groups, and Y and Y' may be the same or different, and are a hydrogen atom, hydroxyl group, amino group, alkyl group, or sulfonyl group.

4,263,168

OLEFINE POLYMERIZATION CATALYST

Malcolm P. Rochefort, Luton, and Paul D. Gavens, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 27, 1979, Ser. No. 24,366

Claims priority, application United Kingdom, Jan. 10, 1979, 00943/79

Int. Cl.[3] **C08F** *4/64*

U.S. Cl. 252—429 B **15 Claims**

1. A process for the production of a composition suitable for use as a component of an olefine polymerisation catalyst, which process comprises treating a component I which is at least one solid inorganic oxide with a component II which is a magnesium hydrocarbyl halide compound, a component III which is an ester and a component IV which is titanium tetrachloride, wherein

(A) component I is reacted with component II;

(B) the product of stage (A) is reacted with either component III or component IV; and

(C) the product of stage (B) is reacted with whichever of component III or component IV is not used in stage (B) said component III being a carboxylic acid ester of the formula:

$$R^1COOR^2$$

in which

R^1 is a hydrocarbyl group which may be substituted with one or more halogen atoms and/or hydrocarbyloxy groups; and

R^2 is a hydrocarbyl group which may be substituted by one or more halogen atoms.

4,263,169

CATALYSTS AND CATALYST COMPONENTS USEFUL FOR POLYMERIZING OLEFINS

Umberto Scata, and Giuliano Cecchin, both of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 11, 1979, Ser. No. 28,964
Claims priority, application Italy, Apr. 12, 1978, 22208 A/78
Int. Cl.[3] C08F *4/02, 4/64*
U.S. Cl. 252—429 B **17 Claims**

1. Components for catalysts for polymerizing olefins comprising the product of the reaction between at least the following substances:

(a) a halogenated Ti compound selected from the group consisting of Ti tetrahalides and Ti haloalcoholates;

(b) a solid support comprising the following essential components or mixtures thereof: component (b1) containing (A) an oxygenated Mg compound selected from the group consisting of MgO, mixed oxides of Mg, Al and/or Si, Mg hydroxide, Mg hydroxychloride or bromide, Mg nitrate, Mg phosphates, Mg silicates, Mg carboxylates and the products obtained from the dehydration, under hydrolysis conditions, of hydrated Mg halides, and (B) an adduct between a Mg dihalide and at least one hydrocarbyl electron-donor compound or the product of the decomposition of said adduct to Mg dihalide; or

component (b2) obtained by reacting an oxygenated Mg compound as defined in (A) with a hydrocarbyl electron-donor compound free from active hydrogen atoms (component ED) or with mixtures thereof with an electron-donor compound containing active hydrogen atoms (compound HED);

the reaction system comprising also a compound ED, at least when said compound ED or derivatives thereof are not used in preparing support (b), the amount of compound ED present in the catalyst component, in a form non-extractable with $TiCl_4$ at 80° C., being in the range of from 0.05 to 5 moles per mole of Ti compound existing after the treatment at 80° C.

4,263,170

CATALYSTS COMPRISING MAGNESIUM AND TRANSITION METAL

Karel Bujadoux, Lens, France, assignor to Societe Chimique des Charbonnages - CdF chimie, Paris France

Filed May 4, 1979, Ser. No. 36,167
Claims priority, application France, May 5, 1978, 78 13416
Int. Cl.[3] C08F *4/64, 4/62*
U.S. Cl. 252—429 C **19 Claims**

1. A catalyst comprising the product obtained by bringing into contact

(a) a compound of magnesium comprising at least one species selected from the group consisting of magnesium mono-halides (MgX) $(MgX_2)_a$ $(Mg)_b$ $(MgO)_c$, X being a halogen and said magnesium mono-halide being obtained by thermal decomposition of a powdery organo-magnesium halide R_1MgX prepared in the absence of any solvent, wherein R_1 is an organic radical, and wherein $0.1 \leqq a \leqq 0.5$, $0 \leqq b \leqq 0.45$, and $0 \leqq c \leqq 0.25$; and

(b) at least one halide of a transistion metal selected from the group consisting of titanium and vanadium, the valency of said metal in said halide being lower than or equal to 3, the quantities of (a) and (b) being such that the atomic ratio of magnesium to said transition metal is between 1 and 25.

2. A catalyst comprising the product obtained by bringing into contact

(a) a compound of magnesium comprising at least one species selected from the group consisting of halomagnesium hydrides $(HMgX)$ $(MgX_2)_b$ $[Mg(OR)_2]_c$, X being a halogen and said halomagnesium hydride being obtained by thermal decomposition of a powdery organomagnesium halide R_1 MgX prepared in the absence of any solvent, wherein R_1 is an organic radical, and wherein R is a hydrocarbon radical, $0 \leqq a \leqq 0.75$, $0 \leqq b \leqq 0.70$, and $0 \leqq c \leqq 0.25$; and

(b) at least one halide of a transition metal selected from the group consisting of titanium and vanadium, the valency of said metal in said halide being lower than or equal to 3, the quantities of (a) and (b) being such that the atomic ratio of magnesium to said transition metal is between 1 and 25.

4,263,171

POLYMERIZATION CATALYST

Mitsuzo Shida, Barrington; Thomas J. Pullukat, Hoffman Estates, and Raymond E. Hoff, Palatine, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Aug. 1, 1979, Ser. No. 63,111
Int. Cl.[3] C08F *4/02, 4/64, 4/68*
U.S. Cl. 252—429 C **21 Claims**

1. An olefin polymerization and copolymerization catalyst active in the presence of an alkyl aluminum cocatalyst prepared by mixing, in the presence of a solvent, reactive materials comprising dry particles of an inorganic oxide having active surface hydroxyl or oxide groups chosen from the group consisting of silica, alumina and silica-alumina, said particles having been preactivated by heating at between about 200° C. and 900° C., and a complex of the general formula $(MgR_2)_m(AlR_3')_n$ where R and R' are alkyl groups and m/n is between about 0.5 and 10, inclusive, to form a reaction mixture of said solvent and a hydrocarbon insoluble first reaction product, and mixing said reaction mixture with a halide, oxyhalide or alkoxyhalide of a metal chosen from the group consisting of titanium, vanadium and zirconium to form a second reaction product, and evaporating said solvent from said second reaction product.

4,263,172

CRACKING CATALYSTS

Dwight L. McKay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 13, 1979, Ser. No. 65,826
Int. Cl.[3] B01J *21/16, 27/02, 29/06*
U.S. Cl. 252—439 **7 Claims**

1. A process for modifying uncontaminated clay based cracking catalysts and clay based cracking catalysts containing contaminating metals such as nickel, iron and vanadium comprising treating a clay based cracking catalyst with manganese selenide in a modifying amount sufficient to increase the ocatane rating of the gasoline produced when the catalyst is used in a hydrocarbon cracking process, and heating the manganese selenide modified clay based cracking catalyst at a temperature in the range of about 800° F. (427° C.) to about 1500° F. (816° C.) under reducing conditions in the presence of a hydrogen-containing medium.

3. A process in accordance with claim **1** wherein said cracking catalyst is a synthetic zeolite combined with amorphous silica/alumina and is contacted with manganese selenide having a particle size such as to pass through a screen of at least about 150 mesh (Tyler Standard Screen).

4,263,173

SUPPORTED NICKEL-COBALT-SILICA COPRECIPITATED HYDROGENATION CATALYST

James L. Carter; Allan E. Barnett, both of Westfield, and John H. Sinfelt, Berkeley Heights, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 2, 1979, Ser. No. 513
Int. Cl.[3] B01J *20/10, 23/70, 21/00*
U.S. Cl. 252—452 **24 Claims**

1. A calcined and supported coprecipitated nickel-cobalt-silica catalyst characterized as having a B.E.T. total surface area ranging from about 150 to about 350 m^2/g wherein the nickel to cobalt ratio in the catalyst ranges from about 63 to

about 0.3 or the nickel to cobalt ratio ranges from about 0.067 to about 0.017 and the total amount of the cobalt and nickel in the catalyst ranges from about 25 wt. % to about 70 wt. % based on the total weight of the calcined and reduced catalyst, wherein said catalyst has been prepared by coprecipitating cobalt, nickel and silicate ions onto solid porous particles.

3. The catalyst in accordance with claim **1** wherein the solid porous particles are selected from the group consisting of kieselguhr, infusorial earth, diatomaceous earth, siliceous earth, silica and alumina.

11. A process for preparing a calcined and supported coprecipitated nickel-cobalt-silica catalyst comprising the steps:

(a) preparing a reaction mixture containing cobalt, nickel and silicate ions and solid porous carrier particles to form a coprecipitate of the cobalt, nickel and silicate ions onto said solid porous support particles;

(b) heating the aqueous reaction mixture;

(c) adding an alkaline precipitating agent to further coprecipitate the cobalt, nickel and silicate ions onto said solid porous support particles wherein the cobalt, nickel, silicate ions and solid porous carrier particles are present in proportions sufficient to provide a nickel to cobalt ratio ranging from about 63 to about 0.3 or ranging from about 0.067 to about 0.017 and the total amount of cobalt and nickel in the catalyst ranges from about 25 to about 70 wt. % based on the total weight of the calcined and reduced catalyst; and

(d) drying said coprecipitated catalyst and calcining it at a temperature ranging from 300° to 450° C. under oxidative conditions.

4,263,174
LOW COKE-MAKE FCC CATALYST

Hosheng Tu, Shorewood, and David C. DeCoster, Countryside, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 29, 1979, Ser. No. 70,935
Int. Cl.³ B01J *29/08*
U.S. Cl. 252—455 Z **8 Claims**

1. A method of catalyst manufacture which comprises:

(a) preparing a catalyst powder comprising a zeolite crystalline aluminosilicate dispersed in a porous carrier material consisting essentially of silica, zirconia and alumina;

(b) mixing said powder with a sufficient amount of an aqueous solution of a water soluble rare earth salt to form a slurry of said catalyst powder, the stoichiometric excess concentration of said rare earth salt in the solution being sufficient to impart to the final catalyst a weight ratio on a volatile free basis of rare earth ions to said carrier material greater than 1.0:100.0;

(c) filtering or centrifuging said slurry to separate therefrom a filter cake containing said catalyst powder; and;

(d) calcining said filter cake without washing or drying said filter cake and recovering the resultant catalytic composite.

4,263,175
CATALYST FOR THE PRODUCTION OF PYRROLIDONE

Frederick A. Pesa, Aurora, and Anne M. Graham, Northfield, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 82,192, Oct. 5, 1979. This application Mar. 10, 1980, Ser. No. 129,155
Int. Cl.³ B01J *23/60, 23/80*
U.S. Cl. 252—473 **4 Claims**

1. A catalyst composition comprising an oxide complex of the formula:

$$A_aD_bFe_cRu_dO_x$$

wherein

A is Ni, Co or mixtures thereof;

D is selected from the group consisting of Rh, Pd, Os, Ir, Pt, Zn and mixtures thereof; and

wherein

a, c and d are 0.01 to 1;

b is 0 to 1; and

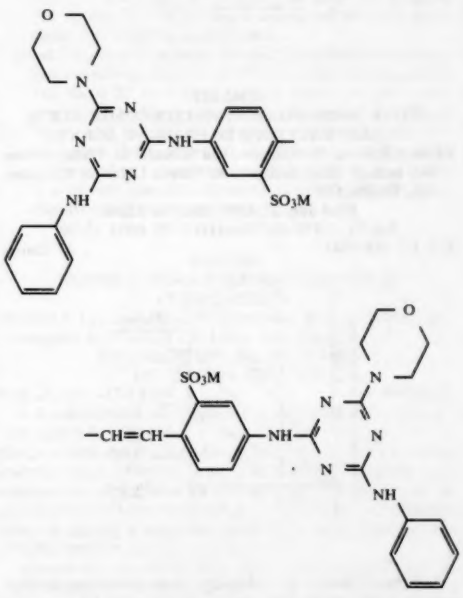
x represents the number of oxygens required to satisfy the valence requirements of the other elements present in the catalyst.

4,263,176
COLOR-STABLE BRIGHTENERS FOR DETERGENTS

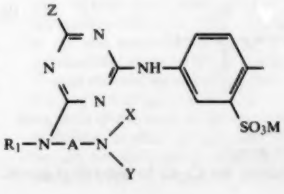
Thomas Martini, Bad Soden am Taunus; Helmut Mengler, Frankfurt am Main; Günter Rösch, Bad Soden am Taunus, and Günter Hohlfeld, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,830
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1978, 2850382
Int. Cl.³ C09K *11/06;* **C11D** *1/14, 3/28, 3/42*
U.S. Cl. 252—543 **4 Claims**

1. A washing powder containing a secondary alkane sulfonate in an amount, which in the absence of the formula 2 brightener, is ordinarily sufficient to discolor an optical brightener of the formula 1, said washing powder containing a mixture consisting of a brightener of the formula 1



and from 5 to 50% by weight, calculated on the brightener of the formula 1, of a brightener of the formula 2



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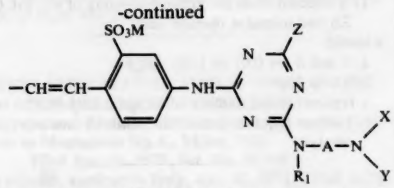
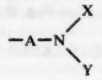


in the above formulae, M is an alkali metal cation, preferably sodium, X is a group of the formula $-COR_2$ or $-SO_2R_3$, R_2 being C_1–C_8-alkyl and R_3 being C_1–C_5-alkyl, C_4–C_8-cycloalkyl, phenyl or toluyl, Y is hydrogen or C_1–C_5-alkyl, A is C_3–C_6-alkylene, R_1 is hydrogen, C_1–C_5-alkyl, C_4–C_8-cycloalkyl or a group of the formula



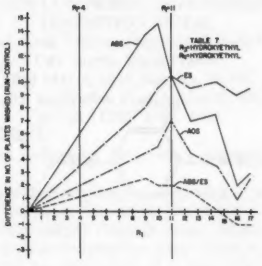
and z is an anilino group, a chloroanilino group or a morpholino group.

4,263,177

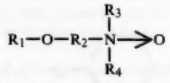
AMINE OXIDE FOAM STABILIZERS FOR ALKYL BENZENE SULFONATE FOAMING AGENTS

Richard R. Egan, Worthington, and Michelle M. Watts, Columbus, both of Ohio, assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Jun. 27, 1979, Ser. No. 52,665
Int. Cl.³ C07C *93/02*; C11D *3/30*; B01J *13/00*
U.S. Cl. 252—547 **35 Claims**



1. A foam stabilizer for stabilizing a foam containing an alkyl benzene sulfonate foaming agent, characterized by an amine oxide foam stabilizer represented by the following general structure



(I)

where,

R_1 is a C_4–C_6 alkyl group

R_2 is a C_2–C_4 alkylene group

R_3, R_4 each, independently, is a C_1–C_4 hydroxyalkyl group.

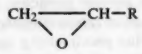
4,263,178

HAIR SHAMPOO COMPOSITION

Jacob J. Guth, Upper Black Eddy, Pa., assignor to The Gillette Company, Boston, Mass.

Filed Nov. 29, 1979, Ser. No. 97,291
Int. Cl.³ C11D *1/75, 3/26, 7/32*
U.S. Cl. 252—547 **6 Claims**

1. A hair shampoo composition in the form of an aqueous solution containing (A) a sulfated alkoxylated polyglycerol prepared by reacting in the presence of an alkali metal alkoxide catalyst (1) a dried polyglycerol having 2 to 15 glycerol units with (2) at least 0.25 mole per mole of glycerol contained in the polyglycerol of an alpha olefin epoxide of the general formula



wherein R is an alkyl group containing from 8 to 16 carbon atoms, and then reacting the resulting product with 0.3 to 2.0 moles per mole of alpha olefin epoxide of a sulfating agent and (B) an amine oxide of the general formula

$$R_1R_2R_3N\rightarrow O$$

wherein R_1 is an alkyl group containing from about 10 to 16 carbon atoms and R_2 and R_3 are each selected from the group consisting of methyl and ethyl groups.

4,263,179

HEAVY-DUTY LIQUID DETERGENT COMPOSITIONS CONTAINING ALKOXYLATED ALKYLENE DIAMINES

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 9, 1979, Ser. No. 65,320
Int. Cl.³ C11D *3/30*
U.S. Cl. 252—548 **8 Claims**

1. A heavy-duty liquid detergent consisting essentially of: an alkalizing amount of 9 to 15 percent of a totally alkoxylated alkylene diamine based upon an initiator alkylene diamine containing 2 to 6 carbon atoms and alkoxylated with an alkylene oxide containing at least 2 carbon atoms,

40 to 55 percent by weight of surfactants selected from the group consisting of nonionic, anionic, amphoteric, and zwitterionic surfactants, and mixtures thereof, and 28 to 42 percent of water and optional ingredients.

4,263,180

METHOD FOR OCCLUDING SEQUESTERING AGENTS IN FILAMENTARY STRUCTURE, OCCLUDED SEQUESTERING AGENTS THUS OBTAINED AND THEIR APPLICATIONS

Walter Marconi, San Donato Milanese; Francesco Bartoli, Rome; Silvio Gulinelli, Monterotondo; Franco Morisi, San Giovanni in Persiceto, and Delio Zaccardelli, Monterotondo, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 4, 1976, Ser. No. 692,773
Claims priority, application Italy, Jun. 6, 1975, 24081 A/75
Int. Cl.³ C08L *89/00*
U.S. Cl. 260—8 **5 Claims**

1. A method for preparing a sequestering structure in filamentary form consisting essentially of the steps of:

(a) dissolving a filament-forming polymer selected from the group consisting of cellulose polymers, polyamides, acrylonitrile polymers and copolymers, butadiene and isoprene copolymers, acrylate polymers and copolymers, methacrylate polymers and copolymers, vinyl ester polymers and copolymers, vinyl chloride polymers and copolymers, vinylidene chloride polymers and copolymers, styrene polymers and copolymers, vinyl butyrate polymers and copolymers, and gamma-methyl glutamate poly-

mers and copolymers in a solvent which is immiscible with water and mixtures of water and glycerol;

(b) dissolving the sequestering agent consisting of dextran, acrylimide-acrylic acid copolymers, carboxy methyl cellulose, p-amino benzyl cellulose, polyethyleneimine hydrochloride, albumin, poly-L-lysine hydrobromide and polyacrylic acid which is chemically non-reactive with the filament-forming polymer in a solvent selected from the group consisting of water or mixtures of water and glycerol to form a disperse solution;

(c) adding the disperse solution containing the sequestering agent to the solution containing the filament-forming polymer;

(d) stirring the disperse solution containing the sequestering agent and the solution containing the filament-forming polymer until a homogeneous emulsion is obtained;

(e) spinning the homogeneous emulsion through a spinneret submerged in a coagulation bath;

(f) collecting the polymer fibers having sequestering agents occluded therein; and

(g) removing the coagulation liquor and the polymer solvent from the fiber.

4,263,181

CHEMICALLY STABILIZED AZULMIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Kuno Wagner, Leverkusen, and Kurt Findeisen, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 64,350

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836154

Int. Cl.³ C08L *61/20, 61/32*

U.S. Cl. 260—9 **85 Claims**

1. A stabilized product comprising a reaction product of (A) an azulmic acid, with (B) an aminoplast-forming agent and a carbonyl compound or with a condensation product of said aminoplast forming agent and said carbonyl compound.

4,263,182

STABLE DISPERSIONS OF FORTIFIED ROSIN

Paul H. Aldrich, London Britton Township, Chester County, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 14, 1980, Ser. No. 177,970

Claims priority, application United Kingdom, Sep. 6, 1979, 30904/79

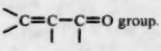
Int. Cl.³ C08L *3/04, 93/04*

U.S. Cl. 260—9 **23 Claims**

1. An aqueous dispersion of fortified rosin consisting essentially of, by weight, (A) from about 5% to about 50% fortified rosin; (B) from about 0.5% to about 10% of at least one water-soluble or water-dispersible cationized starch dispersing agent; (C) from about 0.1% to 4% of at least one anionic surface active agent; and (D) water to 100%, component (B) being selected from

(I) an anionic starch modified by reaction with a cationizing resin selected from the group consisting of (a) a water-soluble aminopolyamide-epihalohydrin resin containing no epoxy groups, (b) a water-soluble alkylenepolyamine-epihalohydrin resin, (c) a water-soluble poly(diallylamine)-epihalohydrin resin containing no epoxy groups, (d) a water-soluble poly(diallylamine) resin, (e) a water-soluble poly(alkylenimine) resin, and (f) a water-soluble poly(alkylenimine)-epihalohydrin resin, and

(II) starch modified by reaction with a water-soluble cationizing resin containing epoxy groups selected from the group consisting of (a) a water-soluble poly(N-alkyldiallylamine)-epihalohydrin resin containing epoxy groups, and (b) a water-soluble aminopolyamide-epihalohydrin resin containing epoxy groups, the aminopolyamide moiety of which contains tertiary amines, said fortified rosin (A) being the adduct reaction product of rosin and an acidic compound containing the



4,263,183

CELLULOSE ESTER/COPOLYACRYLATE COMPOSITION

Ronald R. Light; John R. Dombroski, and Hawkins, James M., all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,715

Int. Cl.³ C08L *1/14*

U.S. Cl. 260—17 R **9 Claims**

1. A composition having improved notched Izod impact strength and improved clarity, said composition comprising a blend of

a cellulose ester selected from cellulose acetate butyrate containing from about 25 to about 55% by weight butyryl, having a hydroxyl content from about 0.5 to about 3% by weight, and having a falling ball viscosity from about 5 to about 20 seconds; and from cellulose acetate propionate containing from about 43 to about 52% by weight propionyl, having a hydroxyl content from about 0.5 to about 3% by weight, and having a falling ball viscosity from about 5 to about 20 seconds; and

about 5 to about 20 parts per hundred parts resin of a copolymer containing about 45 to 55% by weight butyl acrylate and about 55 to 45% by weight methyl acrylate, said copolymer having a glass transition temperature of from about −15° to −25° C. and a range of inherent viscosity from about 1.0 to about 4.0, said inherent viscosity being determined by a concentration of 0.25% of the copolymer in a solvent (dimethyl formamide), the copolymer being dissolved and then measured at 25° C.

4,263,184

HOMOGENEOUS PREDISPERSED FIBER COMPOSITIONS

Thomas J. Leo, and Anders H. Johansson, both of Yardley, Pa., assignors to Wyrough and Loser, Inc., Trenton, N.J.

Filed Jan. 5, 1977, Ser. No. 757,008

Int. Cl.³ C08K *7/02, 7/04*

U.S. Cl. 260—17.4 CL **53 Claims**

1. A substantially homogeneous predispersed fiber composition useful for dispersing a fibrous material in a rubber or plastic compound stock, said composition comprising a fibrous material and a rubber or plastic polymer binder, wherein said composition is prepared by mixing a latex of the rubber or plastic polymer with the fibrous material to form a wetted fiber mixture, mixing a coagulant with the wetted fiber mixture thereby forming said fiber composition,

wherein the percent of total solids in the wetted fiber mixture prior to coagulation which will result in the formation of said fiber composition is determined by first preparing several test predispersed fiber compositions having the same compositions as that desired from several test wetted fiber mixtures, each of which has a different percent of total solids decreasing in equal increments from the point at which the total amount of water present in one of the test wetted fiber mixtures prior to coagulation is substantially equal to that required to completely wet the fibrous material by either capillary action, surface adsorption, or a combination thereof,

from each of the several test fiber compositions obtained, a sufficient number of samples of approximately equal weight are analyzed to determine the percent of fibrous material present in each of the samples and to determine

the standard deviation in the percent of fibrous material for each of the test fiber compositions,

plotting a curve of the standard deviations obtained versus the percent of total solids in the test wetted fiber mixtures used to prepare each of the test fiber compositions,

and then selecting a percent of total solids for the wetted fiber mixture prior to coagulation which corresponds to a point on the homogeneous portion of the curve wherein the homogeneity of the test fiber compositions is substantially equal to that obtained at the point where the total amount of water present in one of the test wetted fiber mixtures prior to coagulation is substantially equal to that required to completely wet the fibrous material by either capillary action, surface adsorption, or a combination thereof.

4,263,185
BIODESTRUCTIVE MATERIAL FOR BONE FIXATION ELEMENTS

Sergei I. Belykh, 2 Krestovsky pereulok, 4, kv. 66, Moscow; Anatoly B. Davydov, ulitsa Krasny Kazanets, 19, korpus 1, kv. 283, Moscow; Gennady L. Khromov, 2 Frunzenskaya, 10, kv. 100, Moscow; Anatoly D. Moschensky, poselok Malakhovka, Bykovskoe shosse, 41, kv. 66, Moskovskaya oblast; Ilya A. Movshovich, Scherbakovskaya ulitsa, 8-12, kv. 33, Moscow; Gennady I. Roitberg, Teply Stan, korpus 27, kv. 375, Moscow; Gennady L. Voskresensky, ulitsa Chkalova, 25, kv. 32, Moscow; Gely G. Pershin, Krivorozhskaya ulitsa, 9, kv. 62, Moscow, and Valery A. Moskvitin, ulitsa Mostovaya, 4, kv. 89, Belgorod-Dnestrovsky Odesskoi oblasti, all of U.S.S.R.

Filed Oct. 1, 1979, Ser. No. 80,296

Int. Cl.[3] C08L *77/06, 39/06, 33/26, 33/10, 1/04*

U.S. Cl. 260—17.4 R **6 Claims**

1. A biodestructive material for bone fixation elements comprising from 20 to 50 percent by weight of a matrix of a non-toxic body resolvable copolymer consisting essentially of 20 to 40 percent by weight of hydrophilic monomer units and 80 to 60 percent by weight of hydrophobic monomer units, and 80 to 50 percent by weight of a reinforcing component made of a non-toxic and body resolvable threads or fibers wherein said hydrophilic monomer units are selected from the group consisting of N-vinyl pyrrolidone, hydrophobic acrylamides, vinyl caprolatam, the mono methacrylic acid ester of ethylene glycol and acrylic acid, the hydrophobic monomer units are selected from the groups consisting of hydrophobic acrylates and vinyl acetate, and the resolvable threads or fibers are selected from the group consisting of polyamide, oxy cellulose, polyvinyl alcohol and naturally-occurring non toxic resolvable fibers.

4,263,186
THERMOPLASTIC MATERIALS

Harald Blüemel, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 858,038, Dec. 6, 1977, abandoned. This application Aug. 17, 1979, Ser. No. 67,499

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657273

Int. Cl.[3] C08K *3/22, 3/26*

U.S. Cl. 260—23 H **6 Claims**

1. A thermoplastic material which comprises:

(a) 100 parts by weight of polyolefin elastomer;

(b) 15–100 parts by weight of a crystalline or partially crystalline polyolefin;

(c) 30–240 parts by weight of chalk, siliceous chalk, or a mixture thereof; and

(d) 0.5–20 parts by weight of titanium dioxide, and which is light colored, and

wherein the polyolefin elastomer is a saturated elastomer consisting of 15–90% of ethylene and 85–10% of propylene, butene-1 or mixtures thereof; or an unsaturated elastomer consisting of ethylene in combination with propylene, butene-1 or mixtures thereof, in a ratio of from 15/85 to 90/10, respectively, and an amount of a multiple olefin sufficient to provide from 0.5 to 30 double bonds per 1000 carbon atoms of the elastomer; and wherein the crystalline or partially crystalline polyolefin is polyethylene or a copolymer thereof with an α-olefin having a density of 0.910–0.975 g/cc, an RSV value of 0.5–3.3 dl/g and a melt index of 0.2–50 g/10 min; a homo- or copolymer, wit an α-olefin, or propylene having a density of 0.90–0.910 g/cc, an RSV value of 1.0–10 dl/g and a melt index of 0.1–50 g/10 min; or a homo- or copolymer, with an α-olefin of butene-1 having a density of 0.910–0.925 g/cc, an RSV value of 1.0–10 dl/g and a melt index of 0.1–100 g/10 min.

4,263,187
SHAPED ARTICLES OF POLYPYRROLIDONE AND METHOD OF PREPARATION THEREOF

Challoner R. Chute, 918 Rugby Road, Charlottesville, Va. 22903

Division of Ser. No. 804,812, Jun. 8, 1977, Pat. No. 4,185,063, which is a continuation-in-part of Ser. No. 687,229, May 17, 1976, abandoned, which is a continuation of Ser. No. 547,033, Feb. 4, 1975, abandoned. This application Jun. 6, 1978, Ser. No. 913,109

Int. Cl.[3] B29C *25/00, 17/02;* **C08G** *69/24;* **D06B** *3/04*

U.S. Cl. 260—29.2 N **9 Claims**

1. A shaped polypyrrolidone article having a tensile strength above 10 grams per denier.

2. A method of enhancing the tenacity of a shaped polypyrrolidone article comprising contacting said article with formic acid for a time sufficient to at least partially impregnate said article, said formic acid being an at least substantially hydrous solution or capable of impregnating said article and combining with water present therein to form an at least substantially hydrous solution, and drawing said article while impregnated with said hydrous formic acid.

7. A method for enhancing the elastomeric properties of a shaped polypyrrolidone article comprising contacting said article with formic acid for a time sufficient to at least partially impregnate said article, said formic acid being an at least substantially hydrous solution or capable of impregnating said article and combining with water present therein to form an at least substantially hydrous solution.

4,263,188
AQUEOUS COATING COMPOSITION AND METHOD

George J. Hampton, Belmont, and William F. Maida, San Jose, both of Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

Filed May 23, 1979, Ser. No. 41,728

Int. Cl.[3] C08L *75/04;* **H01F** *1/00*

U.S. Cl. 260—29.2 TN **7 Claims**

1. An aqueous coating composition for forming a magnetic recording layer, said coating composition comprising a stable aqueous dispersion of magnetic pigment and polyurethane with carboxylic acid groups in the backbone chain.

4,263,189
CATIONIC AMINE-FUNCTIONAL COPOLYMER CONDENSATES

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Dec. 17, 1979, Ser. No. 103,907

Int. Cl.[3] C08L *61/10*

U.S. Cl. 260—29.3 **11 Claims**

1. Water dispersible cationic amine-functional copolymer condensates prepared by heat reacting in solution in water miscible organic solvent: 1- a solution copolymer of monoethylenically unsaturated monomers consisting essentially of, based on the weight of the copolymer, from 3% to 35% of monomer having a basic amino group, from 20% to 50% of isobutoxymethyl acrylamide or methacrylamide, from 0% to 15% of monomer providing active hydrogen atoms coreactive with the N-methylol group, and the balance being nonreactive

monomers, and the amine groups in the copolymer being at least partially neutralized by a solubilizing acid, with; 2-from 5% to 40%, based on the weight of the copolymer, of a solvent-soluble, heat-hardening polymethylol-functional condensate of a phenol having at least two aldehyde-reactive positions with at least two mols of formaldehyde per mol of said phenol, said condensate being poorly dispersible until after condensation with said copolymer.

4,263,190

ADHESION OF TEXTILE CORDS TO RUBBER USING A BUTADIENE-STYRENE VINYLPYRIDINE RUBBER LATEX AND AN ALDEHYDE CONDENSATE-GLYOXAL REACTION PRODUCTS MIXTURE

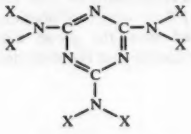
Daniel M. Zavisza, Basking Ridge, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 106,431

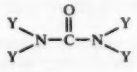
Int. Cl.³ C08L *25/10*

U.S. Cl. 260—29.4 UA **6 Claims**

1. A composition which consists essentially of (I) a styrene-butadiene-vinylpyridine terpolymer latex and (II) a mixture of from about 10 to 90 percent, by weight, based on the total weight of said mixture, of (A) an aldehyde condensate comprising (1) those represented by formula:



wherein each X represents hydrogen, hydroxymethyl, or alkoxymethyl (C_1–C_4 alkoxy), or (2) those represented by formula:



wherein each Y is selected from hydrogen, hydroxymethyl, or alkoxymethyl (C_1–C_4 alkoxy), and from about 90 to 10 percent, by weight of (B) a glyoxal reaction product comprising: (a) those which are the products of reaction of from about 0.1 to 10 molar proportions of urea with one molar proportion of glyoxal or (b) those which are the products of reaction of 0.1 to 10 molar proportions of urea and from 0.01 to 2 molar proportions of formaldehyde with one molar proportion of glyoxal; provided that each of said (A) and (B) in said mixture contains at least two reaction hydroxyl, hydroxymethyl, or alkoxymethyl groups per molecule.

4,263,191

ADDITIVE COMPOSITION USED IN THE PREPARATION OF LOW AIR PORE, PLASTIC CONTAINING, HYDRAULICALLY-SETTING BINDERS

Herbert Eck; Paul-Gerhard Kirst, and Wilhelm Lechner, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,770

Claims priority, application Fed. Rep. of Germany, May 23, 1978, 2822357

Int. Cl.³ C04B *13/26;* **C08K** *3/36;* **C08L** *83/06*

U.S. Cl. 260—29.6 S **2 Claims**

1. An additive composition used in the preparation of low air pore, plastic-containing, hydraulically-setting binders consisting essentially of a mixture of

(1) an aqueous copolymer dispersion having a solids content of between 30% and 65% by weight, a glass transition temperature of the solid copolymer of between −10° C. and +40° C., and a K-value of the solid copolymer of from 35 to 80, which aqueous copolymer dispersion being produced from monomer units of vinyl chloride, vinyl acetate and one or more additional copolymerizable monomers selected from the group consisting of ethylene, vinyl alkanoates having from 8 to 18 carbon atoms in the alkanoyl, and (meth)acrylic acid esters with alkanols having 3 to 8 carbon atoms, by free-radical polymerization in the presence of from 1.5% to 5% by weight of protective colloids and from 0 to 3% by weight of nonionic surface-active agents, both based on the dispersion, with

(2) from 0.3% to 3% by weight, based on the mixture of a previously mixed substantially anhydrous defoamer mixture consisting of

5 to 50 parts out of 100 parts of a dimethyl polysiloxane with 50 to 1,000 mPa's,

1 to 10 parts out of 100 parts of a flame-hydrolyzed silicon dioxide, and

49 to 94 parts out of 100 parts of an ethylene oxide/propylene oxide block copolymer with a molecular weight of from 500 to 10,000 containing from 10% to 60% by weight of ethylene oxide units,

wherein said dimethyl polysiloxane and said flame-hydrolyzed silicon dioxide are mixed together before addition of said block copolymer thereto.

2. In the production of plastic-containing hydraulically-setting binder which comprises mixing a hydraulically-setting material, fillers, water and a plastic dispersion and allowing the mixture to hydraulically set, the improvement consisting of using from 1% to 50% by weight, based on the hydraulically-setting material of the additive composition of claim **1** as said plastic dispersion.

4,263,192

COPOLYMERIZATION IN WATER SOLUBLE POLYOL WITH CONTROLLED REACTION WITH THE POLYOL AND AQUEOUS COATINGS CONTAINING THE RESULTING COPOLYMER SOLUTION

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 910,368, May 30, 1978, Pat. No. 4,193,904.

This application May 29, 1979, Ser. No. 42,890

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.³ C08K *5/05*

U.S. Cl. 260—29.6 E **4 Claims**

1. An aqueous coating composition comprising a water dispersible copolymer solution in water soluble polyol with controlled limited reaction between the copolymer and the polyol produced by copolymerizing monoethylenically unsaturated monomers including a proportion of carboxyl functional monomer providing dispersibility in water with the aid of a base and from 0.5%–5%, based on the total weight of monmers, of a monoethylenically unsaturated monomer carrying a reactive group selected from dicarboxylic acid anhydride functionality and N-methylol functionality, in solution in a water soluble polyol having a molecular weight of at least about 300, the copolymerization being carried out or being preceded by conditions causing substantially complete reaction between the said anhydride or N-methylol functionality in the reactive monomer and the hydroxy groups in the polyol, said copolymer solution being dispersed in water with the aid of a volatile base.

4,263,193

AQUEOUS EMULSION OF MULTI-COMPONENT SYNETHETIC RESIN AND PROCESS FOR PRODUCTION THEREOF

Seiichiro Sakimoto, Chigasaki, and Yoshiaki Yoshioka, Yokohama, both of Japan, assignors to Showa Denko K.K., Japan

Filed Sep. 17, 1979, Ser. No. 76,803
Claims priority, application Japan, Mar. 17, 1978, 53-29839
Int. Cl.[3] C08L *23/04*
U.S. Cl. 260—29.6 RB **8 Claims**

1. An aqueous emulsion of a multicomponent synthetic resin containing 10 to 60% by weight of solids resulting from the polymerization of

(A) 1 to 50% by weight of ethylene,

(B) 4 to 95% by weight of a styrene monomer or a mixture of a styrene monomer and a monomer copolymerizable therewith, and

(C) 4 to 95% by weight of a vinyl ester or a mixture of a vinyl ester and a monomer copolymerizable therewith, said emulsion being obtained by emulsion-polymerization of ethylene and component (C) in the presence of an aqueous emulsion obtained by the emulsion-polymerization of ethylene and component (B).

4,263,194

ANODIC ELECTROCOATING COMPOSITIONS

Edward T. Turpin, Elyria, Ohio, assignor to SCM Corporation, New York, N.Y.

Division of Ser. No. 49,802, Jun. 18, 1979, Pat. No. 4,221,647. This application Jan. 10, 1980, Ser. No. 111,034
Int. Cl.[3] C08L *29/02*
U.S. Cl. 260—29.6 RW **1 Claim**

1. An aqueous electrocoating composition for electrocoating a paint film onto an anode substrate, the improvement comprising:

a binder polymer comprising of (a) a styrene-allyl alcohol copolymer, (b) an unsaturated aliphatic fatty acid, (c) an α,β-unsaturated dicarboxylic acid or anhydride, and (d) an acid-functional acrylic copolymer, wherein said copolymer comprises on a weight basis:

(a) between 20% and 40% of a styrene-allyl alcohol copolymer containing about 2.8 to 4.3 weight parts of copolymerized styrene per 1 weight part of copolymerized allyl alcohol wherein the copolymer has unreacted hydroxyl groups;

(b) between 20% and 50% of an unsaturated aliphatic fatty acid esterified with said hydroxyl groups on said copolymer (a);

(c) between 0% and 3% of an α,β-unsaturated dicarboxylic acid or anhydride esterified with said hydroxyl group on said copolymer (a); and

(d) between 20% and 50% acid-functional acrylic copolymer containing double bonds coreacted by addition copolymerization with double bonds in the fatty acid and the dicarboxylic acid or anhydride (c), and said acid-functional groups on said acid-functional acrylic copolymer being neutralized whereby said binder polymer composition is solubilized in water to form an anodic electrocoating composition.

4,263,195

MOULDING COMPOSITIONS INCLUDING A MIXTURE OF TWO POLYESTERS

Silvio Vargiu, Como; Pietro Paparatto, Milan, and Antonio Parodi, Monza, all of Italy, assignors to Euteco S.p.A., Milan, Italy

Filed May 1, 1979, Ser. No. 35,049
Int. Cl.[3] C08K *5/12, 5/17;* **C08L** *67/06*
U.S. Cl. 260—31.8 XA **12 Claims**

1. A granular moulding composition in the form of free-flowing granules which are free from a tendancy to agglomerate or release dust and which is suitable for injection, which composition consists essentially of: (a) from 10 to 50% by weight of a mixture of first and second polyesters, wherein the first polyester is the polycondensation product of an alkylene glycol with maleic and/or fumaric acid, having the following properties:

melting point (at the capillary): 130°–160° C.

acid value (mg KOH/g): 10–30

Brookfield viscosity at 160° C. (cps): 350–600 and the second polyester is the polycondensation product of an alkylene glycol with an aromatic dicarboxylic acid or a mixture thereof with maleic and/or fumaric acid, said mixture comprising at least 25% in moles of aromatic dicarboxylic acid and said second polyester having the following properties:

melting point (at the capillary): 65°–90° C.

acid value (mg KOH/g): 10–35

Brookfield viscosity at 160° C. (cps): 9,000–18,000, the first polyester being present in an amount of from 5 to 35 parts by weight for each 100 parts by weight of the sum of the first and second polyesters, balance being second polyester;

(b) from 0.2 to 2% by weight of an organic peroxide having a decomposition temperature above 70° C.;

(c) one or more inert fillers, said composition becoming fluid and flowing at a temperature on the order of 120° C. and hardening at a temperature of from 150° to 170° C.; and

(d) from 0.5 to 2% by weight of plasticizing and fluidizing agents selected from the group consisting of diallyl phthalate, acrylamide and N-substituted acrylamides.

4,263,196

HIGHLY FILLED THERMOPLASTIC COMPOSITIONS PREPARED WITH FINE PARTICLE SIZE FILLER

Frederick G. Schumacher, Wilmington, Del., and Walter Yllo, Carneys Point, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 27, 1979, Ser. No. 52,927
Int. Cl.[3] C08K *5/01*
U.S. Cl. 260—33.6 UA **23 Claims**

1. A composition consisting essentially of (a) from about 5 to about 50% by weight of at least one copolymer of ethylene with at least one comonomer selected from the group consisting of vinyl esters of saturated carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- or dicarboxylic acids of 3 to 5 carbon atoms, and esters of said unsaturated mono- or dicarboxylic acids wherein the alcohol moiety has 1 to 8 carbon atoms, the ethylene content of said copolymer being at least about 60% by weight, the comonomer content of said copolymer being from about 5 to about 40% by weight, and the melt index of said copolymer being from about 0.1 to about 150, provided that when said copolymer of ethylene is an ethylene/vinyl ester copolymer said copolymer can contain up to about 15% by weight of carbon monoxide or sulfur dioxide; (b) from about 2 to about 15% by weight of processing oil; and (c) from about 50 to about 90% by weight of filler having sufficiently fine particle size to enable production of a smooth, continuously extruded sheet, strand, or tube, substantially free of melt fracture and such that when said strand is pelletized it yields pellets that are free flowing.

4,263,197
PROCESS FOR DYEING LINEAR POLYAMIDES IN THE MELT

Paul Lienhard, Frenkendorf; Abul Iqbal, Ettingen, and Heinz Peter, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

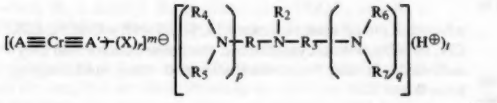
Continuation of Ser. No. 916,623, Jun. 19, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 79,292

Claims priority, application Switzerland, Jun. 23, 1977, 7722/77

Int. Cl.³ C08L *77/00*

U.S. Cl. 260—37 N **12 Claims**

1. A process for dyeing linear polyamides in the melt in which the dyeing is effected by means of a dye salt of a 1:2 chromium complex of a monoazo dye and an amine, having the formula



wherein

A, A′ represents identical or different radicals of azo dyes, which radicals are bound to the Cr atom after 2 protons have been split off by the formation of 2 rings,

X represents a —COO or —SO_3 group not bound to the Cr atom,

R_1 represents an alkyl or alkylene group having 1–18 C atoms, a cycloalkyl or cycloalkylene group having 5–6 C atoms, or a phenyl or phenylene group, or said group substituted by halogen atoms or by alkyl group having 1–6 C atoms,

R_3 represents an H atom, an alkyl or alkylene group having 1–18 C atoms, or a cycloalkyl group having 5–6 C atoms,

R_2, R_4, R_5, R_6 and R_7 represent hydrogen, alkyl having 1 to 18 C atoms or cycloalkyl having 5 to 6 C atoms,

m and t represent the numbers 1–3, r=m−1,

p and q represent 0 or 1, where if R_3 represents a hydrogen atom, q=0; and t=p+q+1.

4,263,198
THICKENING AGENTS FOR UNSATURATED POLYESTER RESIN COMPOSITIONS

Martin L. Feldman, East Brunswick, and James T. De Groff, Oldwick, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jun. 1, 1979, Ser. No. 44,725

Int. Cl.³ C09K *3/20;* **C09L** *67/06*

U.S. Cl. 260—40 R **8 Claims**

1. A thickening agent for unsaturated polyester resin compositions that comprises

(a) 25% to 70% by weight of a thickener that is a Group II-A metal oxide or hydroxide and

(b) 30% to 75% by weight of an unsaturated polyester vehicle comprising

(1) 50% to 95% by weight of an unsaturated polyester that is the product of the reaction of a dicarboxylic acid component containing 80 to 90 mole % of at least one unsaturated aliphatic dicarboxylic acid having 4 to 8 carbon atoms and 10 to 20 mole % of at least one saturated aromatic dicarboxylic acid with an alcohol component containing 40 to 60 mole % of at least one glycol having 2 to 6 carbon atoms and 40 to 60 mole % of at least one monohydric alcohol having 6 to 12 carbon atoms, in the amount of 0.4 mole to 0.6 mole of the dicarboxylic acid component per mole of the alcohol component, and

(2) 5 to 50% by weight of an unsaturated monomer capable of reacting with said unsaturated polyester to form cross-linkages.

4,263,199
POLYESTER MOLDING COMPOSITIONS

Kenneth E. Atkins, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,590

Int. Cl.³ C08L *67/00, 67/06*

U.S. Cl. 260—40 R **9 Claims**

1. In a glass-reinforced molding composition containing an unsaturated polyester, a low-profile additive and an ethylenically unsaturated polymerizable monomer suitable for use in molding applications, the improvement wherein the low-profile additive is a combination of a carboxyl-containing saturated polyester and a vinyl chloride/vinyl acetate polymer.

8. Composition claimed in claim **1** containing a thickening amount of a chemically active thickening agent.

9. Composition claimed in claim **8** wherein the thickening agent is magnesium oxide.

4,263,200
FREE FLOWING CHLOROPOLYETHYLENE, ITS MANUFACTURE AND USE

Wolfram Busch, Hochheim am Main; Johannes Brandrup, Wiesbaden; Werner Sommer, Bad Soden am Taunus, and Horst Semmler, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,824

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1979, 2913855

Int. Cl.³ C08K *3/18, 3/22, 3/34;* **C08L** *23/28*

U.S. Cl. 260—42.49 **7 Claims**

1. Pulverulent chloropolyethylene characterized by an average molecular weight M_w of 1.2×10^4 to 4×10^6, a chlorine content of 20 to 50% by weight and a content of

(a) 0.5 to 10 parts by weight, calculated on 100 parts by weight of chloropolyethylene, of fine-grained vinyl chlo-

ride polymer having an average particle diameter of 2 to 20 μm and

(b) 0.05 to 2 parts by weight, calculated on 100 parts by weight of chloropolyethylene, of fine-grained, inorganic additives having hydrophobic surface properties, an average particle diameter of at most 10 μm, an oil number (according to DIN 51,199) of at least 60% and/or a BET surface of at least 100 m^2/g, the proportion of additives (a) and (b) being in the range of from 30:1 to 2:1 and the two additives being preponderantly distributed on the surface of the chloropolyethylene particles.

4,263,201

FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, Ind.; Jimmy L. Webb, Ballston Lake, N.Y., and Joseph B. Williams, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 7, 1978, Ser. No. 967,399

Int. Cl.[3] **C08K** *5/03, 5/09, 5/36;* **C08L** *71/04*

U.S. Cl. 260—45.7 S **35 Claims**

1. A flame retardant aromatic carbonate polymer composition comprising in admixture an aromatic carbonate polymer and a minor amount of a mixture (1) a metal salt selected from the group consisting of a monomeric or polymeric organic sulfonate and an organic carboxylate; and (2) a monomeric or polymeric organic halogenated compound, wherein said metal salt is selected from the group consisting of the alkali metal salts, alkaline earth metal salts and mixtures thereof with the proviso that when said minor amount of a mixture contains a sulfonate, the halogenated compound is a monomeric halogenated compound of the formula:

$R''(X)_m$

wherein X is chlorine or bromine, m is an integer from 1 to the number of replaceable hydrogen atoms on the monomeric halogenated compound, and R'' is an organo radical derived from an aliphatic or cycloaliphatic hydrocarbon of from 6 to 20 carbons.

4,263,202

NOVEL METAL COMPLEXES

Michael Rasberger; Samuel Evans, and Paul Moser, all of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 10, 1978, Ser. No. 923,124

Claims priority, application Switzerland, Jul. 15, 1977, 8794/77

Int. Cl.[3] **C07D** *401/14, 401/12, 401/10, 413/02*

U.S. Cl. 260—45.75 R **10 Claims**

1. Metal phenolates having at least one piperidinyl group sterically hindered on the nitrogen atom are suitable as additives for organic material.

4,263,203

FLAME RETARDANTS FOR POLYAMIDES

Yuzo Hata, Hirakata, and Katsumi Kuratani, Tawaramachi, both of Japan, assignors to Unitika Limited, Amagasaki, Japan

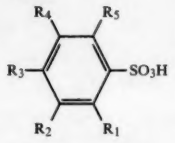
Filed Apr. 17, 1979, Ser. No. 30,767

Claims priority, application Japan, May 9, 1978, 53-55312; May 9, 1978, 53-55313

Int. Cl.[3] **C07C** *143/38, 143/44, 143/58;* **C08K** *5/42*

U.S. Cl. 260—45.85 H **16 Claims**

5. A flame retardant composition, which comprises: a polyamide and a flame retardant amount of a flame retardant reaction product obtained by reacting a compound having the formula:



wherein R_1 to R_5 each represents H, SO_3H, NH_2, COOH, OH, CN, or NO_2, with dicyandiamide, the molar ratio of said dicyandiamide to said benzenesulfonic acid compound ranging from 0.5 to 3.

4,263,204

MONOAZOIC HYDROSOLUBLE CATIONIC DYES

Fabrizio Merlo, Saronno; Ruggero Battisti, Novara; Giorgio Bornengo, Novara; Nicola Mazzaferro, Novara; Angelo Mangini, and Antonio Tundo, both of Bologna, all of Italy, assignors to Montedison S.p.A., Milan, Italy

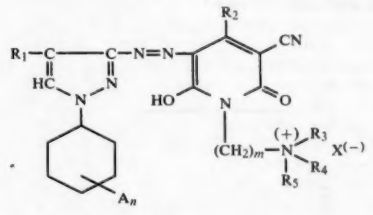
Filed Nov. 28, 1978, Ser. No. 964,162

Claims priority, application Italy, Nov. 29, 1977, 30140 A/77

Int. Cl.[3] **C09B** *45/00, 29/22*

U.S. Cl. 260—147 **2 Claims**

1. Hydrosoluble cationic monoazoic dyes free of sulphonic and carboxylic acid groups and having the formula (I):



(I)

in which

R_1 is H or CH_3;

R_2 is CH_3 or C_2H_5;

R_3 & R_4 are CH_3 or C_2H_5;

R_5 is CH_3, C_2H_5 or $C_6H_5CH_2$;

A is H, Cl, Br, alkyl or alkoxyl groups having up to 2 carbon atoms or CF_3;

m is a whole number from 1 to 4;

n is a whole number from 1 to 3; and

X represents a monovalent anion.

4,263,205

MONOAZO PIGMENTS DERIVED FROM SUBSTITUTED AMINOTHIOPHENES

Stefan Hari, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

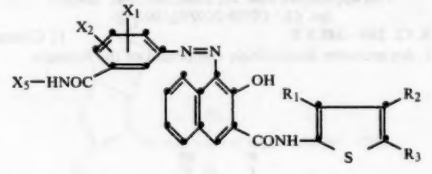
Filed May 31, 1979, Ser. No. 44,123

Claims priority, application Switzerland, Jun. 9, 1978, 6319/78

Int. Cl.[3] C09B 29/20, 29/22; C09D 3/48, 11/02

U.S. Cl. 260—152 6 Claims

1. A monoazo pigment of the formula



in which R_2 is methyl, R_1 is cyano or —$COOR_6$ and R_3 is —$COOR_6$ wherein R_6 is methyl or ethyl, X_1 and X_2 are independently hydrogen, halogen, alkyl having 1-4 C atoms or alkoxy having 1-4 C atoms, and X_5 is phenyl or phenyl substituted by one, two or three identical or different substituents selected from the group consisting of chlorine, alkyl having 1-4 C atoms, alkoxy having 1-4 C atoms, trifluoromethyl, —$COOX_4$, —$CONHX_4$, —$NHCOX_4$ and —$CONH_2$ in which X_4 is alkyl having 1-4 C atoms, phenyl, benzyl, or said phenyl or said benzyl substituted by halogen or by alkyl having 1-4 C atoms.

4,263,206

REACTIVE DYESTUFFS CONTAINING CHLORINE OR FLUORINE SUBSTITUENTS AND ONE OR MORE 1,3-DICYANOBENZENE RADICALS LINKED TO THE DYESTUFF AT THE 2-, 4- OR 6-POSITION

Brian Anderson, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

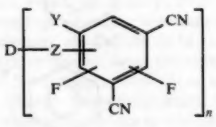
Filed Mar. 12, 1979, Ser. No. 19,404

Claims priority, application United Kingdom, May 4, 1978, 17778/78

Int. Cl.[3] C09B 1/34, 19/00, 29/30, 31/072, 33/044, 45/08, 45/18, 50/00

U.S. Cl. 260—195 5 Claims

1. A dyestuff of the formula:



where

D is a chromophoric group,

n is 1 or 2,

where R is H, C_{1-4} alkyl, C_{1-4} alkyl substituted by OH, OSO_3H, CN or SO_3H or phenyl,

and Y is H, F, Cl, CN, NO_2 or SO_3H.

4,263,207

10,11-DIHYDRODIBENZO[b,f][1,4]THIAZEPINE CARBOXYLIC ACIDS ESTERS AND AMIDES THEREOF

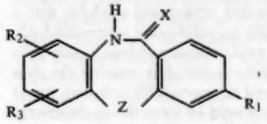
Joshua Rokach, Chomedey-Laval, Canada; Edward J. Cragoe, Jr., Lansdale, and Clarence S. Rooney, Worcester, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

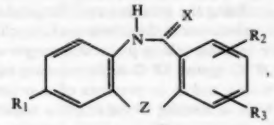
Filed Aug. 1, 1978, Ser. No. 930,107

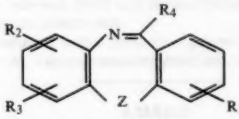
Int. Cl.[3] C07D 00/00, 281/04, 265/30

U.S. Cl. 260—239.3 T 21 Claims

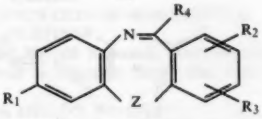
1. A compound selected from the group consisting of dibenzo[b,f]thiezepines having the structural formulae:







and



wherein

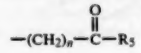
Z is a member selected from the group consisting of thio, sulfinyl and sulfonyl;

X is a member selected from the group consisting of O and H_2;

R_4 is a member selected from the group consisting of hydrogen, and morpholino;

R_2 and R_3 are the same or different and are members selected from the group consisting of hydrogen, halogen, nitro, loweralkyl, amino, N-loweralkylamino, N,N-diloweralkylamino, loweralkanoyl, hydroxy, loweralkoxy, loweralkylthio, trifluoromethylthio, loweralkylsulfinyl, loweralkylsulfonyl and trifluoromethyl; and

R_1 is



wherein n is an integer between 0 and 4;

R_5 is a member selected from the group consisting of hydroxy, loweralkoxy, N,N-diloweralkylaminoloweralkoxy, hydroxyloweralkoxy, carboxyloweralkoxy, amino, N-loweralkylamino, N,N-diloweralkylamino, loweralkylsulfonylamino, carboxyloweralkylamino and carboxamidoloweralkylamino, and the pharmaceutically acceptable salts thereof.

4,263,208

2-OXABICYCLOOCTANE DERIVATIVES, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

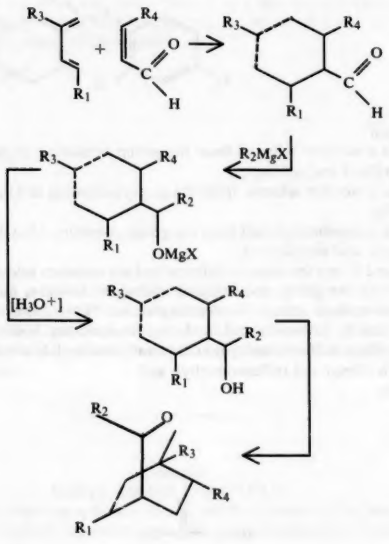
Division of Ser. No. 46,936, Jun. 7, 1979, Pat. No. 4,231,940, which is a division of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Nov. 16, 1979, Ser. No. 95,092

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.[3] **C07D** *311/00*

U.S. Cl. 260—345.1 **1 Claim**

1. A process for preparing oxabicycloalkanes comprising the steps of (i) reacting an alpha-beta unsaturated aldehyde with a conjugated 1,3-diene whereby a cyclohexene carboxaldehyde is formed; (ii) reacting the cyclohexene carboxaldehyde with an alkyl or alkenyl Grignard reagent; (iii) reacting the thus formed cyclohexenyl carbinol organometallic salt with water in the presence of a protonic acid to form the cyclohexenyl carbinol; (iv) cyclizing the resulting cyclohexenyl carbinol to form the oxabicyclooctane in the presence of a cyclizing agent, said cyclization reaction taking place at a temperature in the range of from 25° C. up to 150° C. in the presence of a protonic acid or a Lewis acid, and in the presence of an organic solvent miscible therewith, according to the reaction sequence:



wherein R_1 and R_3 each represent hydrogen or methyl and are each the same or different; wherein R_4 is hydrogen, methyl or ethyl; wherein R_2 is one of C_1–C_6 alkyl or one of C_3–C_5 alkenyl; and wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond; and where X is chloro, bromo or iodo.

4,263,209

AROMATIC DIANHYDRIDES

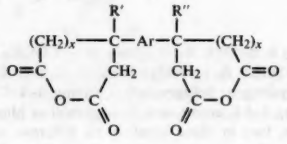
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 53,669, Jul. 2, 1979, abandoned. This application Jan. 21, 1980, Ser. No. 114,004

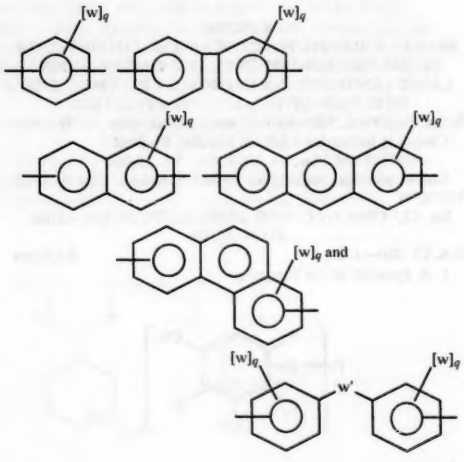
Int. Cl.[3] **C07D** *309/32, 307/60*

U.S. Cl. 260—345.9 R **11 Claims**

1. An aromatic dianhydride compound of the formula



wherein Ar is a $C_{6\text{-}10}$ arylene radical selected from the group consisting of:



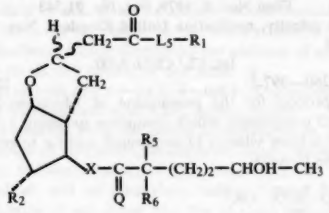
wherein w in each occurrence is halo, nitro, or a $C_{1\text{-}10}$ radical selected from alkyl, aryl, alkaryl, aralkyl, haloalkyl, haloaryl, aryloxy and alkoxy; q is an integer from zero to 4; and w' is oxygen, sulfur, alkylene, oxyalkylene, alkylenedioxy or polyoxyalkylene; R', R'' individually are hydrogen or alkyl, aryl, aralkyl, or alkaryl radicals containing up to 10 carbon atoms; and both x's are either zeros or ones.

4,263,210
19-HYDROXY-4-OXO-PGI$_1$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,474
Int. Cl.[3] C07D *307/395*
U.S. Cl. 260—346.22 5 Claims

1. A prostacyclin-type compound of the formula



wherein L_5 is
(1) $—(CH_2)_p—$, wherein p is 2, 3, or 4,
or (2) $—CH_2—CF_2—$, wherein p is 2, 3, or 4, wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive, wherein R_1 is
(1) $—COOR_3$,
(2) $—CH_2OH$,
(3) $—CH_2N(R_7)(R_8)$,
(4) $—CO—N(R_7)(R_8)$,
(5) $—CO—NH—SO_2—R_{15}$, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH—N=NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{16}$,
wherein —(p-Ph)— is para-phenylene and —(Ph) is phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) $—CH_2CH_2—$.

4,263,211
PROCESS FOR THE RECOVERY OF MALEIC ANHYDRIDE FROM GASES CONTAINING MALEIC ANHYDRIDE

Gerhard Keunecke, Geyen; Anton Klopfer, Cologne; Herbert Krimphove, Pulheim, and Lothar Sterck, Hürth, all of Fed. Rep. of Germany, assignors to Davy International Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,367
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1979, 2910385
Int. Cl.[3] C07D *307/60*
U.S. Cl. 260—346.76 7 Claims

1. In a process for recovering maleic anhydride from a maleic anhydride-containing reaction gas, whereby (a) said maleic anhydride-containing reaction gas is contacted in a scrubbing zone with a scrubbing solution which is water or an aqueous maleic acid solution, (b) said scrubbing solution containing maleic acid is thereafter concentrated in a concentration zone and dehydrated in a dehydration zone to thereby form maleic anhydride which is then purified by distillation in a distillation zone, and (c) said concentration, dehydration and distillation steps being performed under a vacuum maintained by withdrawing vapor-containing gases from said concentration, dehydration and distillation zones using the suction of jet pumps, the improvement which comprises:
(A) employing pressurized air as a propellant for said jet pumps;
(B) admixing said propellant air with said vapor-containing gases removed from said concentration, dehydration and distillation zones; and
(C) introducing said admixture of propellant air and suction-removed, vapor-containing gases into said scrubbing zone.

4,263,212
PROCESS FOR PREPARATION OF SUBSTITUTED OLEFINS

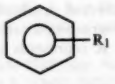
Pangbu Hong, Tokyo, and Hiroshi Yamazaki, Kamifukuoka, both of Japan, assignors to Rikagaku Kenkyusho, Wako, Japan

Filed Feb. 14, 1980, Ser. No. 121,313
Claims priority, application Japan, Feb. 28, 1979, 54-23246; Oct. 16, 1979, 54-133200
Int. Cl.[3] C07G *27/00;* C07C *2/66, 307/36*
U.S. Cl. 260—347.5 9 Claims

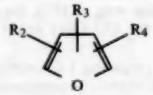
1. A process for the preparation of substituted olefins, which comprises reacting an aromatic or furan compound represented by the following general formula:

R—H

wherein R stands for



(in which R_1 stands for a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a methoxycarbonyl group, an acetoxy group, a cyano group or a halogen atom, two or more of which substituents may be present and, if so, they may be the same or different), or

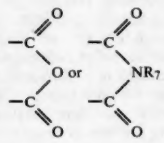


wherein R_2, R_3 and R_4, which may be the same or different,

stand for a hydrogen atom, an alkyl grup having 1 to 4 carbon atoms, a phenyl group, an acetyl group, a formyl group or a methoxycarbonyl group, with an olefinic compound represented by the following general formula:

$$R_5CH{=}CHR_6$$

wherein R_5 and R_6, which may be the same or different, stand for a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an aryl group, an alkoxy group having 1 to 4 carbon atoms, an acyl group, a carboxyl group, an alkoxycarbonyl group having 1 to 4 carbon atoms, a formyl group or a cyano group, or R_5 and R_6 may be bonded together to form a group



in which R_7 stands for a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a phenyl grup, in the presence of carbon monoxide by using a rhodium carbonyl complex as a catalyst, to form a substituted olefin represented by the following general formula:

$$R{-}CR_5{=}CHR_6$$

wherein R, R_5 and R_6 are as defined above.

4,263,213

2,4-DIHYDROXY-4'-(SUBSTITUTED AMINO)-DIPHENYLAMINES

Andree Bugaut, Boulogne, and Francoise Estradier, Paris, both of France, assignors to L'Oreal, Paris, France

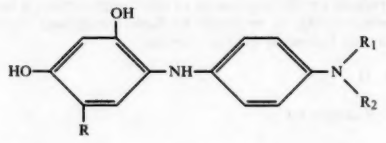
Filed Apr. 4, 1979, Ser. No. 27,064

Claims priority, application France, Apr. 6, 1978, 78 10209

Int. Cl.[3] **C07D** *307/14;* **C07C** *87/62*

U.S. Cl. 260—347.7 **5 Claims**

1. A 2,4-dihydroxydiphenylamine of the formula:



(I)

or an acid addition salt thereof, in which formula R_1 represents a hydrogen atom, R_2 represents a tetrahydrofurfuryl or methoxyethyl radical and R represents a hydrogen atom or a methyl radical.

4,263,214

FLUOROVITAMIN D COMPOUNDS AND PROCESSES FOR THEIR PREPARATION

Hector F. DeLuca; Heinrich K. Schnoes; Joseph L. Napoli, Jr., and Bruce L. Onisko, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 928,279, Jul. 26, 1978, Pat. No. 4,188,345. This application Aug. 6, 1979, Ser. No. 64,209

Int. Cl.[3] **C07J** *9/00*

U.S. Cl. 260—397.2 **6 Claims**

1. The process for preparing 1-fluorovitamin D compounds and 1-fluoro-5,6-trans-vitamin D compounds which comprises treating the corresponding 1-hydroxylated vitamin D compounds with a dialkylamino sulfur trifluoride reagent, thereby replacing the hydroxy group present in such treated compounds with fluorine.

4,263,215

PROCESS FOR THE PREPARATION OF 1-HYDROXYLATED VITAMIN D COMPOUNDS

Robert H. Hesse, Cambridge, Mass., and Graham Johnson, Milton Keynes, Great Britain, assignors to Research Institute for Medicine and Chemistry, Inc., Cambridge, Mass.

Filed Nov. 6, 1979, Ser. No. 91,743

Claims priority, application United Kingdom, Nov. 7, 1978, 43458/78

Int. Cl.[3] **C07J** *9/00*

U.S. Cl. 260—397.2 **15 Claims**

1. A process for the preparation of 1-hydroxy-5,6-trans vitamin D compounds which comprises oxidising a 1-unsubstituted 5,6-trans vitamin D compound using a selenite ester having the formula:

$$R^1O{-}Se(O){-}OR^2 \qquad (II)$$

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom or an alkyl group with 1 to 9 carbon atoms or an aralkyl group having 1–9 carbon atoms in the alkyl portion and 6–9 carbon atoms in the aryl portion, with the proviso that at least one of R^1 and R^2 represents an alkyl or aralkyl group; or R^1 and R^2 together represent an alkelene group with 2 to 9 carbon atoms.

4,263,216

DIGLYCERIDE MANUFACTURE

Robert A. Volpenhein, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 20, 1978, Ser. No. 953,303

Int. Cl.[3] **C11C** *3/02*

U.S. Cl. 260—410.7 **25 Claims**

1. A process for preparing saturated 1,3-diglycerides without need for organic solvent extraction of undesired glycerides, comprising the steps of:

(a) reacting substantially saturated triglycerides with a reactant selected from glycerol plus glycerolysis catalyst or pre-formed glycerate to provide a glycerolysis product which comprises a mixture of monoglycerides, triglycerides, 1,2-diglycerides and 1,3-diglycerides; and

(b) storing the glycerolysis product of Step (a) in the presence of a low temperature rearrangement catalyst at a storage temperature below the melting point of the glyceride components of said glycerolysis product for a storage period of at least about 4 hours.

4,263,217

HYDROCARBON-SOLUBLE MAGNESIUM-ALUMINUM COMPOSITIONS

Dennis B. Malpass, LaPorte, and Loyd W. Fannin, Dickinson, both of Tex., assignors to Texas Alkyls, Inc., Deer Park, Tex.

Filed Sep. 24, 1979, Ser. No. 78,314

Int. Cl.[3] **C07F** *5/06*

U.S. Cl. 260—448 A **6 Claims**

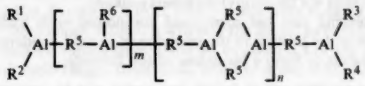
1. A hydrocarbon-soluble complex comprising

(a) a dialkylmagnesium compound of the formula

$$RMgR'$$

in which R and R' are straight-chain alkyl groups of 1 to 4 carbon atoms each, and either have identical lengths or differ from each other in length by one carbon atom, and

(b) an aluminum diene polymer of the formula



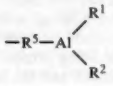
in which

R^1, R^2, R^3, and R^4 are independently selected from the group consisting of the isobutyl radical, an alkenyl radical of said diene, an alkenyl radical formed by the addition of said diene to the isobutyl radical, and an alkadienyl radical formed by the addition of said diene to an alkenyl radical of said diene, or

either or both of the pairs R^1R^2 and R^3R^4 conjointly form an alkylene radical of 4 to 7 carbon atoms;

R^5 is selected from the group consisting of an alkylene radical of said diene, an alkylene radical formed from the addition product of said diene with said isobutyl radical, and an alkenylene radical formed from the addition of said diene with the alkylene radical of said diene;

R^6 is selected from the group consisting of the R^1 radical and radicals having the formula



m is an integer from 0 tl 2, and

n is an integer from 0 to 2,

said diene being either isoprene or 1,3-butadiene,

such that the atomic ratio of magnesium to aluminum is from about 0.1 to about 5.0.

4,263,218

ALCOHOL-RHODIUM SEPARATION PROCESS

Steve J. Dougherty, Sumner, Wash., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 862,555, Dec. 20, 1977, abandoned. This application Oct. 4, 1979, Ser. No. 81,919

Int. Cl.³ C07C *27/06, 27/34, 27/26*

U.S. Cl. 260—450 **3 Claims**

1. In the process of separating the alcohol products obtained by the high pressure homogeneous liquid phase reaction of oxides of carbon and hydrogen in a production solvent containing a rhodium carbonyl complex catalyst which process comprises mixing said solution with water and an organic extraction solvent in which said production solvent is more soluble than it is in water, said extraction solvent being characterized as being liquid under the conditions of the extraction as being essentially immiscible in water and as being essentially non-reactive with water and the alcohol products whereby said products are separated into an aqueous phase and the catalyst is separated into the extraction solvent phase, the improvement which comprises mixing said solution, water and extraction solvent in contact with added CO gas.

4,263,219

PRODUCTION OF SUBSTITUTED PHENYLUREA

Fumio Fujita, Osaka; Hiroshi Kishida, Takarazuka; Nobushige Itaya, Nishinomiya, and Ichiki Takemoto, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

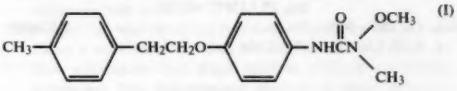
Filed Feb. 21, 1979, Ser. No. 13,610

Claims priority, application Japan, Feb. 21, 1978, 53-19312; Feb. 21, 1978, 53-19313; Feb. 21, 1978, 53-20288; Feb. 22, 1978, 53-20289; Feb. 23, 1978, 53-20493; Feb. 24, 1978, 53-21219; Feb. 24, 1978, 53-21220; Feb. 24, 1978, 53-21221; Feb. 25, 1978, 53-49659

Int. Cl.³ C07C *69/76*

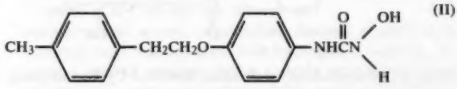
U.S. Cl. 260—453 RW **9 Claims**

1. A process for producing N'-4-[2-(4-methylphenyl)ethoxy]phenyl-N-methoxy-N-methylurea of the formula:



(I)

which comprises reacting N'-4-[2-(4-methylphenyl)ethoxy]-phenyl-N-hydroxyurea of the formula:



(II)

with dimethyl sulfate in the presence of a phase transfer catalyst.

4,263,220

ALKYLENE DICYANATES

Edward E. Flagg, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 10,452, Feb. 2, 1979, abandoned. This application Feb. 4, 1980, Ser. No. 118,166

Int. Cl.³ C07C *122/00*

U.S. Cl. 260—453 AL **2 Claims**

1. A C_{2-6} alkylene dicyanate compound.

4,263,221

PROCESS FOR THE PREPARATION OF AROMATIC CARBODIIMIDES

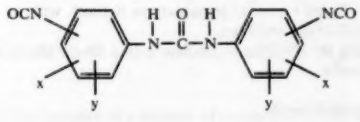
Wilhelm J. Schnabel, Branford, and Robert M. Early, North Branford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 24, 1980, Ser. No. 143,074

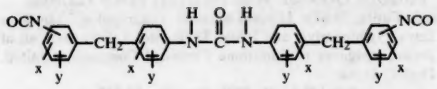
Int. Cl.³ C07C *119/055*

U.S. Cl. 260—453 AM **8 Claims**

1. A process for preparing symmetrical, aromatic carbodiimides comprising the step of reacting a symmetrical, aromatic urea with phosgene in an inert liquid reaction medium, said aromatic urea being selected from the group consisting of ureas having the formula



and ureas having the formula



wherein x is selected from the group consisting of hydrogen, alkyl, and halogen and y is selected from the group consisting of hydrogen, alkyl, alkoxy, alkyl-aryl and halogen.

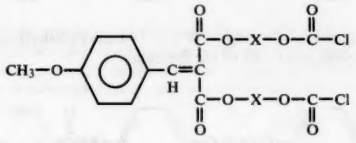
4,263,222

DICHLOROFORMATES

Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,668
Int. Cl.[3] C07C *69/96*
U.S. Cl. 260—463 **5 Claims**

1. A dichloroformate of the general formula



where X is independently a divalent saturated C_2–C_{10} alkylene group.

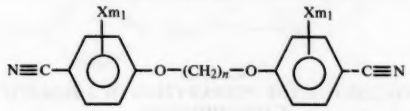
4,263,223

SYNTHESIS OF 4,4'-DICYANO-POLYHALO-DIPHENOXYALKANES

Marc Pauly, Chateau Salins, France, assignor to Laboratoires Serobiologiques S.A., Pulnoy, France

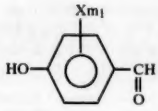
Filed Apr. 20, 1977, Ser. No. 789,200
Claims priority, application France, Apr. 27, 1976, 76 12454
Int. Cl.[3] C07C *121/75*
U.S. Cl. 260—465 F **19 Claims**

1. A method of obtaining a bis-nitrile-halo-diphenoxy alkanes compound of the formula:



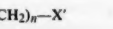
wherein X is a halogen selected from bromine, chlorine, iodine and fluorine; n is an integer from 1 to 11; and m_1 is an integer from 1 to 4; said method comprising the steps of:

reacting 4-hydroxy-halo-benzaldehyde of the formula:



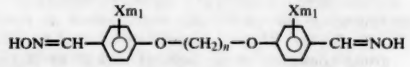
wherein X and m_1 are as herein above defined, with an alkali metal hydroxide, and then,

reacting the resulting alcoholate with a dihalo alkane of the formula:



wherein X' is a halogen selected from bromine, chlorine, iodine and fluorine and n is an integer from 1 to 11 so as to obtain the symmetrical 4,4'bis-formyl-diphenoxy-alkane.

condensing said last mentioned compound with hydroxylamine by heating in the presence of an acid condensation catalyst to form a bis-oxime of the formula:



then dehydrating the bis-oxime.

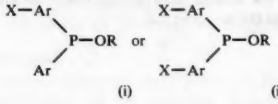
4,263,224

ACRYLONITRILE DIMERIZATION PROCESS

James R. Jennings, Hutton Rudby; Ross J. Cozens, Liverpool, and Michael J. Lalkham, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 17, 1979, Ser. No. 58,544
Claims priority, application United Kingdom, Jul. 26, 1978, 31253/78
Int. Cl.[3] C07C *120/00, 121/30*
U.S. Cl. 260—465.8 D **6 Claims**

1. A two step process for the dimerisation of acrylonitrile to predominantly 1,4-dicyanobutenes, in which the acrylonitrile is dissolved in an organic solvent capable of donating protons, the acrylonitrile and solvent being substantially dry such that the water level of the reaction mixture is less than 50 ppm by volume, the acrylonitrile being present in a concentration of from 5% to 75% by volume, and the solution contacted at a temperature in the range of 0° C. to 180° C. with a catalyst comprising from 0.001 to 1% by volume of an aryl phosphinite of the formula:



where Ar is a phenyl or a naphthyl group and where groups X, which may be the same or different, are electron-donating substituents of the aromatic nucleus which give rise to a negative Hammett σ constant, and R represents a cyclohexyl group or an alkyl group having 1 to 8 carbon atoms, the acrylonitrile and solvent being contacted in a first step with a scavenging reagent in the proportion of 0.02% to 1% by volume calculated on the total volume of the acrylonitrile/solvent mixture wherein said scavenging reagent is an aryl phosphonite containing two alkoxy groups or cycloalkoxy groups and one aryl group attached to the phosphorus atom wherein said aryl group is phenyl or tolyl, for a predetermined period of time before being contacted with the said catalyst to react said scavenging agent with residual impurities contained in said acrylonitrile/solvent reaction mixture and thereafter in a second discreet step contacting said acrylonitrile/solvent reaction mixture with said catalyst.

4,263,225

HYDROGENATION PROCESS USING SUPPORTED NICKEL-COBALT-SILICA COPRECIPITATED CATALYST

James L. Carter; Allan E. Barnett, both of Westfield, and John H. Sinfelt, Berkeley Heights, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 513, Jan. 2, 1979. This application Sep. 19, 1979, Ser. No. 77,008
Int. Cl.[3] C07C *15/04, 5/10*
U.S. Cl. 564—422 **15 Claims**

1. A process for hydrogenating organic compounds which comprises contacting at least one hydrogenatable organic

compound with hydrogen in the presence of a reduced and supported coprecipitated nickel-cobalt-silica catalyst characterized as having a B.E.T. total surface area ranging from about 150 to about 350 m^2/g wherein the nickel to cobalt ratio in the catalyst ranges from about 63 to about 0.3 or the nickel to cobalt ratio ranges from about 0.067 to about 0.017 and the total amount of the cobalt and nickel in the catalyst ranges from about 25 wt. % to about 70 wt. % based on the total weight of the calcined and reduced catalyst, wherein said catalyst has been prepared by coprecipitating cobalt, nickel and silicate ions in the presence of solid porous particles.

4,263,226

PROCESS FOR HYDROLYZING 5-ISOTHIOCYANO-5,6-DIHYDRO-DICYCLOPENTADIENE

Melvin M. Pombo, Newark, Del., assignor to Boots Hercules Agrochemicals Co., Wilmington, Del.

Filed Jan. 22, 1980, Ser. No. 114,442

Int. Cl.[3] **C07C** *83/00*

U.S. Cl. 564—459 **1 Claim**

1. The process of preparing 5-amino-5,6-dihydro-dicyclopentadiene, which comprises reacting 5-isothiocyano-5,6-dihydrodicyclopentadiene and an aqueous caustic medium at a temperature in excess of the melting point of 1,3-bis[5-(5,6-dihydro-dicyclopentadienyl)]-2-thiourea while establishing and maintaining a pressure sufficient to maintain the water in the reaction mixture in a liquid state.

4,263,227

5-(2-CHLORO-4-TRIFLUOROMETHYL)-, OR (4-TRIFLUOROMETHYL OR 2,6-DICHLORO-4-TRIFLUOROMETHYLPHENOXY)-2-NITRO-SUBSTITUTED CARBONYL OXIME-O-ALKYL ETHERS

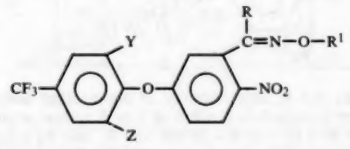
Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 14, 1979, Ser. No. 38,746

Int. Cl.[3] **C07C** *131/00;* **A01N** *25/10*

U.S. Cl. 564—256 **10 Claims**

1. A compound graphically represented by general Formula I



(I)

wherein:

Y is chlorine or hydrogen;

Z is chlorine when Y is chlorine, or Z is hydrogen when Y is chlorine or hydrogen;

R is hydrogen or an alkyl of up to three carbon atoms; and

R^1 is an alkyl of up to four carbon atoms.

4,263,228

TWO STAGE CATALYTIC HYDROGENATION OF OLEFINICALLY UNSATURATED DINITRILES

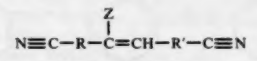
Howard B. Irvin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 12, 1979, Ser. No. 74,708

Int. Cl.[3] **C07C** *85/12*

U.S. Cl. 564—491 **4 Claims**

1. A process for the catalytic hydrogenation of an olefinically unsaturated dinitrile feedstock comprising at least one unsaturated dinitrile compound of the formula



wherein R and R′ are independently selected from the group consisting of an alkylene radical and an alkylidene radical, Z is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises the steps of:

contacting said feedstock in a first stage reaction zone with hydrogen, a first diluent and a first catalyst under suitable hydrogenation conditions to thereby effect the at least substantially complete hydrogenation of the olefinic unsaturation of said compound;

withdrawing the resulting reaction effluent from said first stage reaction zone;

fractionating said resulting reaction effluent to thereby remove a substantial portion of said first diluent from the thus withdrawn first stage reaction effluent to thereby produce a first intermediate dinitrile product having a reduced concentration of said first diluent;

stripping said first diluent from said first intermediate dinitrile product to thereby produce a second intermediate dinitrile product having a substantially reduced concentration, if any, of said first diluent; and

contacting said second intermediate dinitrile product in a second stage reaction zone with hydrogen, a second diluent, a second catalyst, and a suitable secondary amine formation suppressant under suitable reaction conditions to thereby effect the at least substantially complete conversion of the nitrile groups in said intermediate dinitrile product to primary amine groups.

4,263,229

METAL COMPLEX DYES OF TRISAZO COMPOUNDS HAVING A 3,5-DINITRO-2-HYDROXYPHENYLAZO GROUP AND TWO OTHER ARYLAZO GROUPS BOUND TO A 1-AMINO-3-HYDROXY-1,3-DIAMINO- OR 1,3-DIHYDROXY-BENZENE NUCLEUS

Martin Studer, Bettingen, and Heinz Wicki, Basel, both of Switzerland

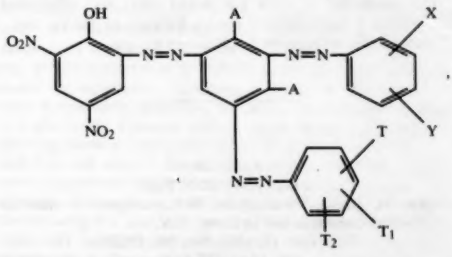
Continuation-in-part of Ser. No. 325,910, Jan. 22, 1973, abandoned, which is a continuation of Ser. No. 34,869, May 5, 1970, abandoned. This application Dec. 9, 1974, Ser. No. 530,718

Claims priority, application Switzerland, May 23, 1969, 7877/69

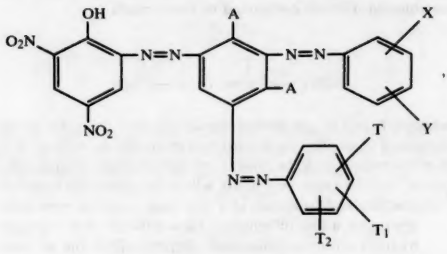
Int. Cl.[3] **C09B** *45/42, 45/44, 45/46, 45/48*

U.S. Cl. 260—145 C **21 Claims**

1. A dye selected from the group consisting of (a) a metal complex of a compound of the formula



(b) a metal complex of a mixture of compounds of the formula



and (c) mixtures thereof, wherein

each A is independently amino or hydroxy,

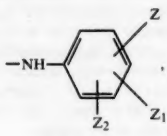
T is carboxy or sulfo,

T_1 is hydrogen, nitro, halo, alkyl, substituted alkyl, alkoxy, substituted alkoxy or sulfo,

T_2 is hydrogen, nitro, halo, alkyl, substituted alkyl, alkoxy or substituted alkoxy,

X is hydrogen, hydroxy, halo, nitro, alkyl, substituted alkyl, alkoxy, substituted alkoxy or sulfo, and

Y is hydrogen, hydroxy, halo, nitro, alkyl, substituted alkyl, alkoxy, substituted alkoxy or



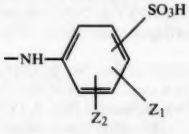
wherein

Z is hydrogen, carboxy or sulfo,

Z_1 is hydrogen, hydroxy, nitro, alkyl, substituted alkyl, alkoxy or substituted alkoxy, and

Z_2 is hydrogen or nitro,

with the proviso that Y is



when X is other than sulfo,

wherein

each alkyl, alkoxy, alkyl chain of substituted alkyl and alkoxy chain of substituted alkoxy independently has 1 to 6 carbon atoms,

the substituent of each substituted alkyl and substituted alkoxy is independently cyano, hydroxy or chloro, and

each halo is independently chloro or bromo.

4,263,230

BISPHOSPHONITES

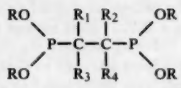
Eugene H. Uhing, Pleasantville, N.Y., assignor to Stauffer Chemical Company, Dobbs Ferry, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,887

Int. Cl.³ C07F *9/28*

U.S. Cl. 260—932 **11 Claims**

1. A compound of the formula:



wherein R_1, R_2, R_3 and R_4 are each hydrogen, and R is selected from the group consisting of straight or branched chain haloalkyl of from 1 to 12 carbon atoms, phenyl, and alkyl substituted phenyl wherein each alkyl is from 1 to 12 carbon atoms.

4,263,231

PROCESS FOR THE MANUFACTURE OF 3-ACYL-2-ALKYL- AND 3-ACYL-2-ARYL-1,3,2-BENZOXAZAPHOSPHOLANES

Utz-Hellmuth Felcht, Bruchmühlbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,298

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826622

Int. Cl.³ C07F *9/24*

U.S. Cl. 260—968 **9 Claims**

1. Process for the manufacture of 3-acyl-2-alkyl- and 3-acyl-2-aryl-1,3,2-benzoxazaphospholanes which comprises reacting dichlorophosphanes, 2-N-acylaminophenols and organic nitrogen bases binding hydrogen chloride in a molar proportion of about 1:1:≧2 in a one stage process and in an inert solvent without isolation of an intermediate product.

4,263,232

PROCESS FOR THE MANUFACTURE OF SELECTED PHOSPHONATES

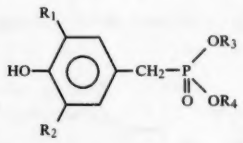
Mansukh G. Parekh, Cranston, R.I., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,580

Int. Cl.³ C07F *9/40*

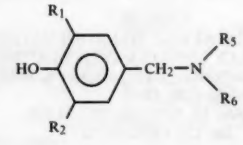
U.S. Cl. 260—989 **4 Claims**

1. An improved process for the preparation of a compound of formula I



(I)

wherein R_1 and R_2 independently of one another denote a straight- or branched-chain alkyl of 1 to 8 carbon atoms or cycloalkyl of 6 to 8 carbon atoms, and R_3 and R_4 independently of one another denote a straight- or branched-chain alkyl of 1 to 22 carbon atoms, cycloalkyl of 6 to 8 carbon atoms, the $-(CH_2)_{2\text{-}12}-S-$alkyl or the $-(CH_2)_{2\text{-}12}-O-$alkyl group wherein the alkyl group contains 1 to 18 carbon atoms, phenyl or alkylphenyl with 7 to 14 carbon atoms by the reaction of essentially stoichiometric molar amounts of a compound of formula II



(II)

wherein R_1 and R_2 are defined as above and R_5 and R_6 indepen-

dently of one another denote a straight- or branched-chain alkyl of 1 to 5 carbon atoms or together with inclusion of the nitrogen atom denote morphilino or piperidino, with a compound of the formula III

wherein R_3 and R_4 are defined as above, in the presence of a base selected from the group consisting of the alkali amides, alkali hydrides, alkali hydroxides, alkali alcoholates and alkali compounds of the phosphites of formula III, followed by neutralization of the base with an organic acid, extraction of the neutralized reaction mixture with hot dilute aqueous mineral acid to remove all inorganic and amine salts into the aqueous layer and isolation of the phosphonate of formula I, wherein the improvement comprises

adding to the salt-free acidified crude product an effective amount of an aqueous solution of oxygenated thiourea to provide a reducing medium to reduce all color-forming bodies in the crude phosphonate product, and

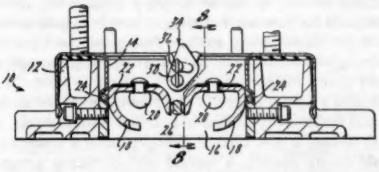
extracting the crude product with methanol to remove all remaining impurities and isolating the desired product.

4,263,233

FUEL PREPARATION FOR INTERNAL COMBUSTION ENGINES

Gordon W. Fenn, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 9, 1979, Ser. No. 83,087
Int. Cl.³ F02M *29/04*
U.S. Cl. 261—78 R **3 Claims**



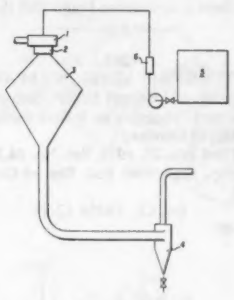
1. In an internal combustion engine having structure defining an induction passage and a spray bar for spraying fuel into the induction passage wherein the spray bar comprises a tube disposed transversely of the direction of flow through the induction passage and a plurality of spray orifices disposed along the length and on the downstream facing side thereof for spraying fuel in a direction generally downstream of the induction passage, the improvement comprising a fuel dispersion element disposed parallel to and downstream of the spray bar tube and having a convex upstream facing surface and disposed such that fuel sprayed from the orifices in the spray bar tube impinges upon the upstream surface of the dispersion element, said element having at least one groove which bounds the upstream convex surface thereof so as to provide a sharp edge at which the convex upstream surface terminates across which fuel sprayed onto the upstream surface is sheared by induction air passing across the element to thereby improve atomization of fuel.

4,263,234

METHOD OF INTIMATE CONTACTING/SEPARATING OF PLURAL PHASES AND PHASE CONTACTOR/SEPARATOR APPARATUS THEREFOR

Francois Prudhon, Versailles; Augustin Scicluna, Aubervilliers, and Jean-Michel Verdier, Paris, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 10, 1979, Ser. No. 28,894
Claims priority, application France, Apr. 10, 1978, 78 10500
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—153 **13 Claims**



1. A process for the intimate contacting of plural, physically disparate phases, comprising (i) establishing a vertically descending current of axially extending, axially symmetrical helical flow of a first gaseous phase, (ii) separately establishing a current of coaxially downwardly vertically extending, rectilinear continuous jet stream of a physically disparate second liquid phase, (III) maintaining said currents of said first and second phases physically separate from each other, (iv) circulating and directing said currents which comprise the plural phases to a zone of restricted flow passage with respect to said helical flow, (v) at said zone of restricted flow passage, converging and intimately, homogeneously admixing said plural currents, and atomizing into a multitude of droplets, and entraining said rectilinear jet stream current within said helical current of gaseous flow, and maintaining at such zone of convergence a momentum of the first phase helical flow of at least 100 times greater than the momentum of the second phase, coaxial rectilinear flow, (vi) concurrently establishing a flow defining a layered horizontal stack of a plurality of hyperboloids by means of the trajectory of said helical current of gaseous flow, which, at a point downstream from said zone of restricted flow passage coestablishes a zone of narrower width than said zone of restricted flow passage, and (vii) also establishing a zone of cooling at or contiguous the said zone of convergence, said zone of cooling being at a temperature such that atomized particles impinging on wall surface members defining same are liquefied and form a continuous liquid film thereon.

9. A phase contactor for the intimate contacting of plural, physically disparate phases, which comprises (i) a distribution zone, said distribution zone being comprised of means for establishing a vertically descending current of axially extending, axially symmetrical helical flow of a first gaseous phase, means for separately establishing a current of coaxially vertically downwardly extending, rectilinear continuous jet stream of a physically disparate second liquid phase, and means for insuring physical separation from each other of said currents of said first and second phases, (ii) a contact zone, said contact zone being comprised of a zone of restricted flow passage with respect to the means of establishing the helical flow, means for the convergence and intimate homogeneous admixture of the separately supplied disparate phases, means for imparting a momentum to the gaseous first phase helical flow which is at least 100 times greater than the momentum of the second phase, coaxial rectilinear flow, means for atomizing into a

multitude of droplets and entraining said rectilinear jet stream current within said helical current of gaseous flow, means for concurrently establishing a flow defining a layered horizontal stack of a plurality of hyperboloids via the trajectory of said helical current of gaseous flow, and means for establishing, at a point downstream from said zone of restricted flow passage, a flow zone of narrower width than said zone of restricted flow passage, and (iii) means for establishing a zone of cooling at or contiguous the said zone of convergence, and means for bringing said zone of cooling to a temperature such that atomized particles impinging on wall surface members defining same are liquefied and form a continuous liquid film thereon.

4,263,235

MIXTURE PREPARATION APPARATUS

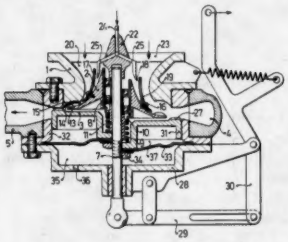
Siegfried Holzbaur, and Konrad Eckert, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,200

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807465

Int. Cl.³ F02M *17/16*

U.S. Cl. 261—89 **14 Claims**



1. A mixture preparation apparatus for mixture-compressing, externally ignited internal combustion engines having a throttle device and a rotatable vane body in the air intake line provided with a plurality of scoops, said scoops arranged to extend into a contoured section of the intake side of an annular flow channel and spaced therefrom in an axial direction during increased air quantities and means upstream of the vane body for introducing fuel into said air intake line, further wherein said scoops are configured to cooperate with said annular flow channel and means for arbitrarily controlling air-fuel mixture to said annular flow channel and therefrom to said engine.

4,263,236

METHOD FOR PRODUCING CATHETERS

Peter J. Briggs, Lancing, and Steven Carpenter, Chichester, both of England, assignors to Matburn (Holdings) Limited, London, England

Filed Aug. 21, 1978, Ser. No. 935,163

Claims priority, application United Kingdom, Aug. 25, 1977, 35679/77

Int. Cl.³ B32B *1/10*

U.S. Cl. 264—26 **7 Claims**

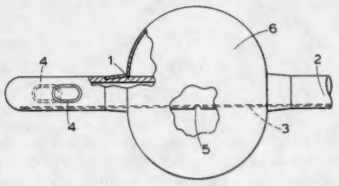
1. A method for producing a catheter with an inflation cuff, said method comprising the steps of:

(a) placing an inflation cuff of an elastomeric material which is not thermoplastic at a desired portion on a catheter shaft of thermoplastic material,

(b) applying a preselected material to the interior of said shaft to prevent the collapse thereof,

(c) heating the shaft sufficiently to soften it, and

(d) moving the ends of said cuff into said softened shaft by applying inwardly directed pressure around the entire periphery of at least each end of said cuff to force the ends of said cuff into the material of said shaft to form recesses by displacing the shaft material with the cuff ends thereby



to form a smooth transition at the junction of said cuff ends and said shaft.

4,263,237

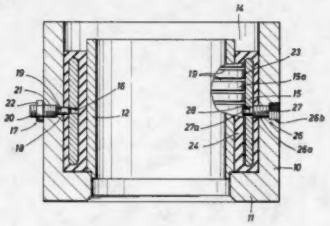
METHOD OF MAKING EXPANDABLE MEMBER FOR FORMING SEALS AND APPLYING FORCE

Frank G. Weeden, 1515 Huge Oaks, Houston, Tex. 77055, and R. Don Foster, 1116 Waugh Dr., Houston, Tex. 77019

Division of Ser. No. 684,835, May 10, 1976, abandoned. This application Nov. 28, 1978, Ser. No. 964,300

Int. Cl.³ B29C *1/02, 3/00;* B29D *3/00;* B29H *9/00*

U.S. Cl. 264—219 **7 Claims**



1. A method of making an expandable assembly for applying a force comprising:

providing mold body means having a mold cavity therein, said mold body means including at least one mold member having a mold cavity surface facing into and partially defining said mold cavity and a bore opening through said mold cavity surface;

positioning a rigid core in said mold cavity in spaced relation to said mold cavity surface of said one mold member, said core having a first surface facing generally toward said mold cavity surface, a second surface facing generally away from said mold cavity surface, and a bore opening through said second surface;

providing conduit means in said mold cavity communicatively interconnecting the bores of said one mold member and said core;

placing an elastomeric material, in non-solid form, in said mold cavity in surrounding relation to said core;

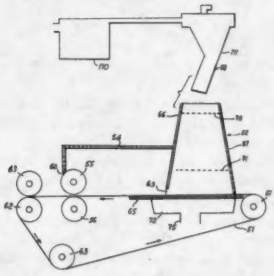
causing said elastomeric material to solidify to a self-supporting elastomeric body with said core imbeded therein while permitting said elastomeric material to bond to said mold cavity surface and to said conduit means but preventing said elastomeric material from bonding to at least said second surface of said core, whereby a potential fluid cavity is formed between said elastomeric body and said second surface of said core for receiving fluid from said conduit means to expand said elastomeric body away from said second surface of said core, and whereby said one mold member may provide at least partial external support for said elastomeric body.

4,263,238
Patent Not Issued For This Number

4,263,239
DRY FORMING OF FIBROUS MATERIAL

John H. Dunbar, Marlborough, and Kenneth L. Gray, Kenilworth, both of England, assignors to Courtaulds Limited, London, England

Filed Sep. 18, 1978, Ser. No. 943,131
Int. Cl.[3] D04H 1/20
U.S. Cl. 264—518 **10 Claims**



1. A process for consolidating fibrous wood pulp material to produce a coherent sheet of wood pulp, said process comprising the steps of:

(1) reducing the moisture content of the fibrous wood pulp material to not more than 30 percent by weight on the total weight of the fibrous wood pulp material,

(2) supplying said fibrous wood pulp material to a hopper located above a gas-pervious continuous conveyor belt, said conveyor belt acting as a base for the hopper,

(3) drawing gas through said conveyor belt and through the fibrous wood pulp material on said conveyor belt,

(4) carrying the dry fibrous wood pulp material on said conveyor belt away from said hopper through an exit between a lower edge of a front wall of said hopper and said conveyor belt to form a mat of fibrous wood pulp material having a substantially uniform depth,

(5) maintaining the average rates of steps (2) and (4) such that the level of the fibrous wood pulp material resting on said conveyor belt in said hopper remains above said exit, thereby ensuring the continual presence of a body of fibrous wood pulp material in said hopper, and

(6) applying pressure to said mat in at least two stages subsequent to carrying the mat away from said hopper on said conveyor belt to consolidate the mat of fibrous wood pulp material to form a coherent sheet, in the first of which stages the mat is pressed to a density of from 0.05 to 0.10 g/cc and in the second of which stages the mat is pressed to a density of from 0.1 to 0.5 g/cc.

4,263,240
APPARATUS AND METHODS FOR FORMING SIMULATED OLD BRICK

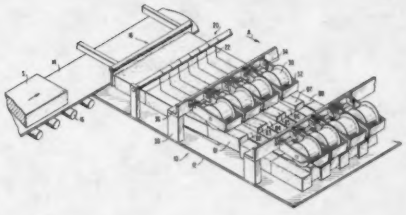
James M. Postell, Jr., Columbia, S.C., assignor to Richtex Corporation, Columbia, S.C.

Division of Ser. No. 873,071, Jan. 27, 1978, Pat. No. 4,147,491.
This application Nov. 3, 1978, Ser. No. 957,560
Int. Cl.[3] B28B 1/08
U.S. Cl. 264—71 **6 Claims**

1. A method for forming simulated old bricks comprising the steps of:

arranging a plurality of bricks in longitudinal and transversely extending rows along a support with the bricks lying substantially in a common plane one with the other,

changing the elevation of selected bricks relative to the remaining bricks in at least one row thereof whereby the lengthwise extending face of each selected brick in said one row is located at an elevation different than the elevation of the longitudinally extending faces of the remaining bricks in said one row, and



forming an impression in the longitudinally extending faces of each selected brick in said one row of bricks and rounding and texturing the edges of each said selected brick along the longitudinally extending faces thereof.

4,263,241
METHOD FOR PRODUCTION OF FIBROUS SHEET MATERIAL AND APPARATUS FOR CARRYING OUT THE SAME

Vyacheslav S. Alexandrov, ulitsa S. Kovalevskoi, 7, korpus 5, kv. 66; Alexandr E. Guschin, Kovensky pereulok, 13, kv. 18; Rudolf V. Zavodov, ulitsa D. Bednogo, 22/2, kv. 113; Elena I. Zhukova, prospekt M. Toreza, 92, kv. 25; Alexandr A. Ivanov, Krasnoselsky raion, Fabrichny poselok, 5; Tatyana S. Fofanova, Serebristy bulvar, 18, korpus 2, kv. 237; Evgeny I. Mikhailov, prospekt Slavy, 16, kv. 270; Ivan M. Dianov, ulitsa Zverinskaya, 17-a, kv. 9; Pavel M. Luzin, Institutsky proezd, 9, kv. 68; Igor A. Sergeev, prospekt Stachek, 27, kv. 8; Lidia A. Pankratova, ulitsa Ryleeva, 17, kv. 17; Vera E. Krylova, prospekt Slavy, 2, korpus 2, kv. 41, and Semen A. Leibenzon, Srednaya Podyacheskaya ulitsa, 15, kv. 1, all of Leningrad, U.S.S.R.

Filed Nov. 3, 1978, Ser. No. 957,478
Int. Cl.[3] D04H 1/20
U.S. Cl. 264—121 **5 Claims**

1. In a method for producing a fibrous sheet material comprising:

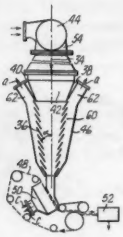
(a) dispersing fibers in a gas stream to form a gas-fiber stream;

(b) supplying the gas-fiber stream onto a screen whereon the fibers are deposited to form a fibrous layer thereon; and

(c) treating the fibrous layer to produce a finished fibrous sheet material, the improvement which comprises:

(d) between steps (a) and (b), the gas-fiber stream is passed through a conduit having a plurality of guide means arranged in parallel converging rows with spaces between the guide means;

(e) said guide means being positioned at an acute angle with respect to the direction of movement of the gas-fiber



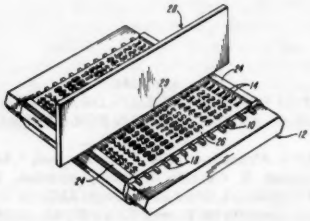
stream so that the fibers in the gas-fiber stream impinge against the guide means, thereby contracting the flow of said gas-fiber stream and redirecting a portion of the gas, in said gas-fiber stream, to flow through the spaces between the guide means in a direction different than the initial direction of the gas-fiber stream, whereby the fiber concentration in the remaining gas-fiber stream is concentrated to 20 to 500 grams per cubic meter.

4,263,242

FLEXIBLE ENDLESS PRINTING BAND AND METHOD OF PRODUCTION

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Oct. 16, 1978, Ser. No. 951,342
Int. Cl.³ B29D *7/16*
U.S. Cl. 264—132 **8 Claims**



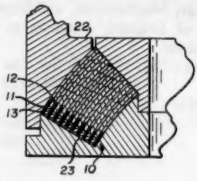
1. In a method of producing endless flexible printing bands each having peripherally spaced printing characters and visually readable characters, and including the steps of molding a wide endless band with a series of peripherally spaced and laterally extending rows of outwardly projecting characters, providing a portion of the wide endless band with a color contrasting material for producing the visually readable characters, and cutting the wide endless band at laterally spaced intervals into a plurality of relatively narrower endless printing bands, the improvement comprising the steps of molding at least two generally parallel spaced guide bars as integral parts of the wide endless band, locating the guide bars with the visually readable characters disposed between the guide bars, and removing a portion of the color contrasting material from the visually readable characters by moving a member along the guide bars.

4,263,243

METHOD FOR MAKING A FLEXIBLE BEARING

Jonathan W. Wilson, Kennebunkport, Me.; Billy H. Prescott, Willard, and D. Morley Cox, Logan, both of Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed May 7, 1979, Ser. No. 36,466
Int. Cl.² B29C *27/00;* **B29G** *5/00*
U.S. Cl. 264—137 **18 Claims**



1. The method for making flexible bearings, comprising:

filling refractory cloth with a curable liquid resin;

dividing the cloth into segments;

laying the segments onto a releasing mold surface in an annular configuration so that they overlap one another only to a limited extent;

completing the mold by placing a second, releasing mold surface over the resin-filled segments;

forming a rigid shim by subjecting the resin-filled cloth to pressure while curing the resin;

interleaving layers of a curable elastomer with a plurality of said rigid shims; and

subjecting the resulting bearing to heat and pressure while curing the elastomer.

4,263,244

PROCESS FOR SPINNING REGENERATED CELLULOSE FIBERS CONTAINING AN ALLOYING POLYMER

Thomas C. Allen, and David B. Denning, both of Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 872,519, Jan. 26, 1978, abandoned. This application May 7, 1979, Ser. No. 36,710
Int. Cl.³ D01D *5/22;* **D01F** *2/08*
U.S. Cl. 264—168 **23 Claims**

1. In a process for making regenerated cellulose fibers containing an alloying polymer of acrylic acid or methacrylic acid, or an alloying copolymer containing acrylic acid and methacrylic acid moieties, an alkali metal salt or ammonium salt thereof, or a mixture thereof, the improved method for making a crimped fiber which comprises mixing the alloying material with a viscose solution containing about 4% to about 8% by weight unreacted sodium hydroxide, maintaining the sodium hydroxide in the mixture at a concentration which is at least 95% as high as it was in the viscose solution without alloying material, and spinning the viscose solution containing said alloying polymer, copolymer or salt.

4,263,245

PROCESS FOR PRODUCING HIGH-STRENGTH, ULTRALOW DENIER POLYBENZIMIDAZOLE (PBI) FILAMENTS

Marshall Tan, Ridgefield Park, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,422
Int. Cl.³ D01D *5/12*
U.S. Cl. 264—184 **30 Claims**

1. A process for the stable production of high strength polybenzimidazole filaments of ultralow denier comprising:

(a) providing a spinning solution comprising approximately 10 to 30 percent by weight of a polybenzimidazole in a solvent selected from the group consisting of dimethylac-

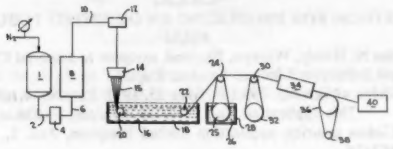
etamide, dimethylformamide, dimethylsulfoxide, and concentrated sulfuric acid,

(b) extruding said spinning solution vertically downward into a gaseous atmosphere following passage through a plurality of extrusion orifices having a diameter of approximately 20 to 200 microns to form a plurality of filaments with the concomitant drawing of said filaments,

(c) passing said resulting filaments from said gaseous atmosphere to a bath comprising a non-solvent for said polybenzimidazole,

(d) passing said filaments through said bath wherein (i) coagulation of said polybenzimidazole is accomplished, and (ii) the drawing of said filaments is continued, with an initial draw ratio of approximately 2:1 to 50:1 being achieved,

(e) passing said filaments from said bath to a washing zone,



(f) washing said resulting filaments while passing through said washing zone to substantially remove residual solvent,

(g) passing said filaments from said washing zone to a drying zone,

(h) drying said filaments while passing through said drying zone,

(i) passing said filaments from said drying zone to a drawing zone provided at a temperature of approximately 400° to 500° C.,

(j) drawing said filaments while passing through said drawing zone at a heat draw ratio of approximately 1.5:1 to 10:1 to produce polybenzimidazole filaments having a denier per filament of approximately 0.05 to 0.5 and a tenacity of at least 4 grams per denier, and

(k) collecting said ultraflow denier filaments following withdrawal from said drawing zone.

4,263,246

NET COVERING FOR ARTICLES

Frank B. Mercer, Blackburn, England, assignor to Netlon Limited, England

Filed Jul. 11, 1979, Ser. No. 56,517

Claims priority, application United Kingdom, Jul. 14, 1978, 29886/78

Int. Cl.³ B29C *13/02*

U.S. Cl. 264—230 **4 Claims**

1. A method of applying a plastics material net covering to at least one article comprising:

providing a tubular netting sleeve which has at least one substantially unorientated zone and at least one orientated annular zone and terminates at an orientated zone;

inserting the article into the orientated zone end of the sleeve, the unorientated zone preventing the article(s) passing out of the other end of the sleeve; and

heat shrinking the open end portion of the orientated zone to secure the sleeve on the article(s).

4,263,247

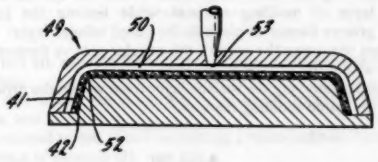
RESIN-FOAM LAMINATE

Joseph C. Berger, West Chicago; James E. Fitzpatrick, Naperville, and James P. Whelan, West Chicago, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 544,918, Jan. 28, 1975, abandoned. This application Dec. 13, 1976, Ser. No. 749,790

Int. Cl.³ B29F *1/10*

U.S. Cl. 264—273 **5 Claims**



1. A process of injection molding for forming a web laminate comprising a resinous olefin polymer substrate and an elastomeric open celled polyester urethane foam web, said process comprising:

(a) Placing a first surface of said foam against a portion of a surface of an injection mold cavity;

(b) injecting against a second surface of said foam a molten resinous olefin polymer at a lower temperature than the melting point temperature of said foam into said mold cavity; and

(c) allowing the resultant web laminate to cool.

4,263,248

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Division of Ser. No. 30,037, Apr. 13, 1979, which is a continuation-in-part of Ser. No. 915,335, Jun. 13, 1978. This application Dec. 28, 1979, Ser. No. 108,081

Int. Cl.³ B29G *3/00*

U.S. Cl. 264—328.2 **4 Claims**

1. In a runnerless injection molding process wherein a thermosetting resin is fused in the manifold of a runnerless injection molding apparatus and cured in a mold cavity, the improvement which comprises employing as the thermosetting resin component, a phenolic novolak molding composition comprising a phenol-aldehyde resin wherein from about 55% to about 90% of the available theoretical para-phenyl linkages in the resin chain are bridged to a phenyl group, and which comprises a blend of (1) a novolak resin condensation product of about one mole of a phenol and less than about one mole of aldehyde, and (2) a novolak resin condensation product of about one mole of a bisphenol and less than about one mole of aldehyde; hexamethylenetetramine, and a filler material.

4,263,249

METHOD FOR PRODUCING REINFORCED PLASTIC TUBULAR BODY HAVING ANNULAR GROOVES, AND MOLD THEREFOR

Masakatu Mayumi, Osaka; Kenji Mitooka; Sigeharu Fujiwara, both of Okayama, and Takesi Okuyama, Kyoto, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1979, Ser. No. 52,915

Claims priority, application Japan, Jun. 28, 1978, 53-78967

Int. Cl.³ B28B *7/06*

U.S. Cl. 264—334 **11 Claims**

1. A method for producing a plastic tubular body having a molded annular groove on the inner surface thereof, which comprises:

mounting an annular groove former consisting of a surface layer of an elastic material and a core covered with the surface layer at a predetermined position on a mold body;

forming a layer of a molding material around the resulting assembly;

curing the layer of molding material;

removing the mold body from within the curved tubular layer of molding material while leaving the annular groove former in place in the cured tubular layer;

then removing the core of the annular groove former from within the surface layer; and

finally removing the surface layer from within the groove in the cured molding material.

4,263,250

LUBRICANT AND RELEASE AGENT FOR MOLDED RUBBER ARTICLES

Günter Schmidt, and Hans-Ferdi Fink, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,768

Claims priority, application United Kingdom, Oct. 16, 1978, 40689/78

Int. Cl.³ B28B *7/36*

U.S. Cl. 264—338 **3 Claims**

1. In a method for manufacturing molded rubber articles wherein a release agent is applied to a mold, the rubber composition is applied to the mold and then subjected to vulcanization conditions, the improvement which comprises said release agent being a mixture of

(a) monoalkyl ethers of oxyethylene-oxypropylene copolymers in which the weight ratio of oxyethylene groups to oxypropylene groups is 25 to 75:75 to 25, wherein the monoalkyl ethers are formed from the addition of ethylene oxide and propylene oxides to a lower alcohol containing from 1 to 6 carbon atoms, and

(b) polyoxyalkylene-polysiloxane copolymers in which the components (a) are soluble or dispersible.

4,263,251

METHOD AND APPARATUS FOR PRODUCING ONE-PIECE CAPSULES

Guenther Voegle, Schoenaich, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,939

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2909230

Int. Cl.³ B29C *5/06*

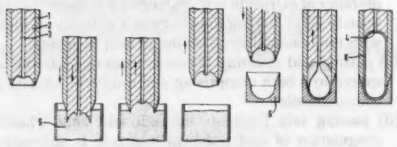
U.S. Cl. 264—503 **10 Claims**

1. A method for producing one-piece gelatin capsules, comprising the steps of

positioning a mechanism containing a supply of gelatin in axial alignment with the capsule forming means provided with a perforated piston at a cylinder having an inner wall and a terminus;

introducing a portion of said supply of gelatin to said capsule forming means;

aligning a base element in contacting and sealing relationship with said capsule forming means and drawing said piston through said cylinder while applying compressed air to



said gelatin through said perforated piston, whereby the capsule is formed on said inner wall of said cylinder.

4,263,252

METHOD FOR PRODUCING AN ORIENTED TUBULAR FILM

Brian N. Hendy, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, England

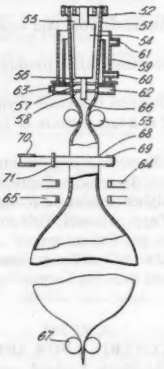
Division of Ser. No. 799,158, May 23, 1977, Pat. No. 4,165,956.

This application Apr. 25, 1979, Ser. No. 33,236

Claims priority, application United Kingdom, Jun. 1, 1976, 22562/76

Int. Cl.³ B29D *9/04*

U.S. Cl. 264—514 **5 Claims**



1. A method of producing an oriented, coated tubular film utilizing a belt having a resilient contact layer, comprising the steps of: extruding a tube of thermoplastic polymeric film-forming material; cooling the extruded tube; withdrawing and axially forwarding the cooled tube; supplying a liquid coating medium to the external surface of said withdrawn tube; spreading the supplied coating medium around at least part of said surface by driving, in a plane substantially normal to the longitudinal axis of said tube, the belt with its resilient contact layer co-operating with said external surface; and reheating and inflating the coated tube to form an oriented coated tubular film.

4,263,253

PROCESS FOR RENDERING SOLIDS STERILE

Volker Pilz, Cologne, and Roland Rupp, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 62,275

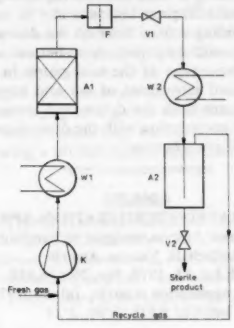
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837115

Int. Cl.³ A61L *2/02*

U.S. Cl. 422—1 **6 Claims**

1. A process for rendering solids sterile, which comprises

dissolving a solid in a single gas or mixture of gases under supercritical conditions, with respect to pressure and tempera-



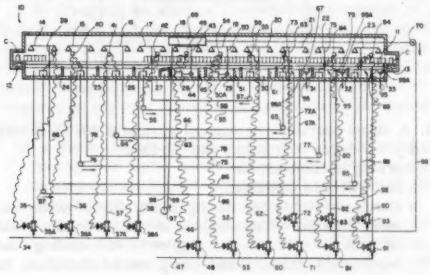
ture, of the single gas or mixture of gases, and transporting the resulting solution through a sterile filter to provide a sterile fluid gas/solid mixture.

4,263,254

APPARATUS FOR AND METHOD OF CONSERVING ENERGY IN PASTEURIZERS

James K. Huling, Belleville, Ill., assignor to Barry-Wehmiller Company, St. Louis, Mo.

Filed Aug. 1, 1979, Ser. No. 62,693
Int. Cl.[3] **A61L** *2/04, 2/24;* **A23C** *3/027;* **A23L** *3/04*
U.S. Cl. 422—25 **5 Claims**



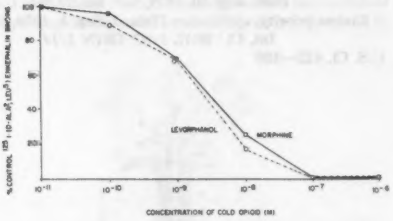
1. A method of operating a pasteurizer having a conveyor for transporting containers from an inlet to an outlet through a pasteurizing zone comprising: establishing a first series of preheating showering zones for delivering a heated liquid on to a plurality of containers for preheating the containers; establishing a second series of precooling showering zones for delivering a cooling liquid on to said containers for precooling the containers; establishing a showering zone between the first and second series of showering zones for delivering a liquid on to said containers at a pasteurizing temperature; connecting a source of cool ambient liquid with the first showering zones; establishing a storage source of heated liquid through fluid connection with one of the first series of preheating showering zones; connecting the storage source of heated liquid to the second showering zones; and controlling in a predetermined sequence the use of the ambient liquid for accommodating the presence of a skipper arising in the first series of showering zones and controlling the use of the storage source of heated liquid for accommodating the presence of the skipper reaching the second series of showering zones to the outlet.

4,263,255

ASSAY METHOD AND COMPOUNDS

Richard J. Miller, Raleigh; Kwen-Jen Chang, and Pedro Cuatrecasas, both of Chapel Hill, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 841,678, Oct. 13, 1977. This application Jun. 28, 1979, Ser. No. 52,968
Int. Cl.[3] **G01N** *33/68;* **C07C** *103/52;* **A61K** *43/00*
U.S. Cl. 422—61 **10 Claims**



1. A test kit, suitable for use in the assay of opioid activity, comprising

(a) a first sealed vessel containing an opiate receptor material; and

(b) a second sealed vessel containing a radio-iodinated compound of formula (I):

$$H\text{-}X^1\text{-}X^2\text{-}X^3\text{-}X^4\text{-}(X^5)_m\text{-}(X^6)_n\text{-}OH \quad (I)$$

wherein X^1 is selected from L-tyrosyl and N-alkyl-L-tyrosyl (wherein the alkyl has 1 to 4 carbon atoms) substituted in the phenol moiety at the 2-position or at both the 2- and 6-positions (with respect to the hydroxy group) with an iodine radioisotope;

X^2 is selected from glycyl and D-alanyl;

X^3 is selected from glycyl and L-alanyl;

X^4 is selected from L-phenylalanyl and L-4-chlorophenylalanyl;

X^5 is selected from L-leucyl, D-leucyl,, L-methionyl, D-methionyl, L-valyl, D-valyl, L-norleucyl, D-norleucyl, L-threony and D-threonyl;

X^6 is D-threonyl;

and m and n are each selected from O and I, provided that when they are both O then X^2 is D-alanyl;

together with their salts, esters, amides and N-alkylamides wherein the alkyl has 1 to 4 carbon atoms,

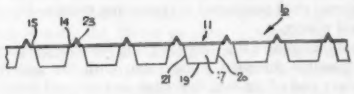
the contents of one of more of the vessels being in either a lyophilised state or an unlyophilised state.

4,263,256

CUVETTES FOR AUTOMATIC CHEMICAL APPARATUS

Charles W. Morle, Gerrards Cross, England, assignor to Coulter Electronics, Inc., Hialeah, Fla.

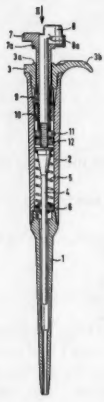
Filed Nov. 5, 1979, Ser. No. 91,188
Int. Cl.[3] **G01N** *35/02, 21/03, 21/13*
U.S. Cl. 422—66 **9 Claims**



1. An integral cuvette strip for use in an apparatus for the examination of liquid samples, said strip comprising a series of connected cuvettes each presenting at least one open receptacle for a liquid sample, each said cuvette including a plurality

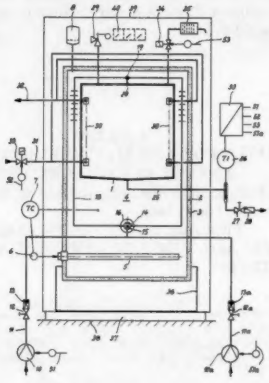
of walls defining the respective receptacle thereof, two opposed walls of the said walls being optically transparent, each said cuvette being connected to an adjacent cuvette by a flexible integral portion of the strip permitting relative angular movement of said adjacent cuvettes both in a horizontal and a vertical plane with respect to said strip in use.

4,263,257
PIPETTE
Seppo J. Metsälä, Nauharinne 8, 01260 Vantaa 26, Finland
Filed Aug. 30, 1979, Ser. No. 70,766
Claims priority, application Finland, Sep. 8, 1978, 782762
Int. Cl.[3] B01L *3/02*; G01N *1/14*
U.S. Cl. 422—100 **3 Claims**



1. A pipette comprising:
a frame means defining a cylindrical space therein;
a piston axially movable within the said cylindrical space and cooperating with the said frame defining the cylindrical space in gasketed relationship;
a helical spring positioned within the said cylindrical space cooperating with the said piston and providing an upward force on the said piston for positioning the piston in spring biased relationship in an upper position in the said cylindrical space;
a filling press-button for overcoming the said upward force of the said helical spring and moving the said piston in a downward direction;
a hollow first shaft positioned in coaxially movable relationship with the said cylindrical space, having an upper end attached to the said filling press-button, and a threaded lower end;
an emptying press-button; for overcoming the said upward force of the said helical spring and moving the said piston in a downward direction;
a second shaft positioned in a slidable engagement within the said hollow first shaft, with the said second shaft having an upper end attached to the said emptying press-button, a threaded lower end, and with the axial end of the said second shaft positioned in contacting relationship with the said piston;
means including a first threaded ring member cooperating in adjustable threaded engagement with the said threaded lower end of the said first shaft and the said frame means providing an adjustable upward limit of movement of the said first shaft, thereby providing a predetermined fill magnitude of the said pipette;
means including a second threaded ring member cooperating in adjustable threaded engagement with the said threaded lower end of the said second shaft and the said lower end of the said first shaft providing an adjustable upward limit of movement of the said second shaft;
means for providing a fixed limit on the downward movement of the said fill press-button; and
means for providing a fixed limit on the downward movement of the said emptying press-button whereby the downward movement of the said piston in cooperation with downward movement of the said emptying press-button is greater than the downward movement of the said piston in cooperation with the downward movement of the said fill press-button.

4,263,258
STEAM-OPERATED STERILIZATION APPARATUS
Karl Kalasek, Vienna, Austria, assignor to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria
Filed Jul. 11, 1979, Ser. No. 56,610
Claims priority, application Austria, Jul. 28, 1978, 5513/78
Int. Cl.[3] A61L *2/06, 2/24*
U.S. Cl. 422—113 **9 Claims**



1. A steam-operated sterilization apparatus for sterilizing laundry, bandages, instruments and the like,
comprising in combination:
a heat-insulated container,
a sterilization chamber having a plurality of walls and being disposed within said heat-insulated container, said heat-insulated container completely surrounding said sterilization chamber and being spaced therefrom to define a space bordering all of said walls between said heat-insulated container and said sterilization chamber, said space being fillable with a fluid acting as a carrier of heat, the temperature of said sterilization chamber being thereby maintainable at the temperature of said fluid,
heating means operable for heating said fluid to a temperature above 100° C., and for substantially maintaining it thereat,
water-conducting means connectable to a source of water and disposed in said space for passing the water therethrough including a water-evaporation section for converting the water into steam, and a steam-heating section for converting the steam into superheated steam, said steam heating section communicating with said sterilization chamber for introducing the superheated steam thereinto,
discharge means communicating with the atmosphere and said sterilization chamber for condensing the superheated steam, and for discharging the condensate and
cooling means operable with a cooling fluid and disposed within said sterilization chamber, for cooling the steam-heated sterilization chamber, thereby introducing a partial vacuum therein, programmable control means

for automatically actuating said cooling means upon a predetermined temperature being reached in said discharge means, and for simultaneously shutting off the source of water to said water-conducting means, and closure means operable to close said discharge means and actuatable upon said partial vacuum occuring in said sterilization chamber, said cooling means being arranged to be automatically shut down, and the source of water being arranged to be automatically supplied to said water-conducting means by said control means following a predetermined time interval.

4,263,259

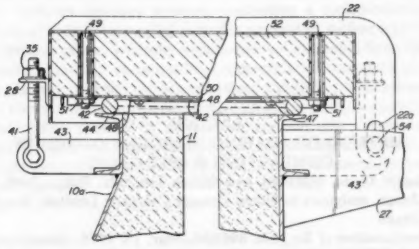
HATCH AND HATCH COVER FOR THERMAL REGENERATION APPARATUS

Edward H. Benedick, Morristown, N.J., assignor to Regenerative Environmental Equipment Co., Inc., Morris Plains, N.J.

Filed May 21, 1979, Ser. No. 40,987

Int. Cl.³ F23G *7/06*

U.S. Cl. 422—173 **8 Claims**



1. in apparatus for thermal regenerative processing of gas flow having at least one heat-exchange section in communication with a source of gas flow on one side and a high temperature chamber on the other, said section having a plurality of heat-exchanging solid members disposed therein and being bounded on top by a generally horizontal wall, the combination comprising:

(a) a hatch extending upwardly from said wall, said hatch having side walls which toward their lower ends are slanted outwardly to form angles of at least about thirty degrees with respect to the vertical, and

(b) a cover for said hatch having a flexible sheet metal lower portion which engages the top edge of said hatch and is constructed to respond to the high temperature within said heat-exchange section without appreciable lateral displacement of said lower portion thereby enabling it to maintain sealing contact with said top edge.

4,263,260

HIGH PRESSURE AND HIGH TEMPERATURE HEAT EXCHANGER

Max Bräutigam, Ottobrunn, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,603

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830225; Jan. 30, 1979, 2903466

Int. Cl.³ F28D *7/02*

U.S. Cl. 422—201 **28 Claims**

1. A heat exchanger comprising:

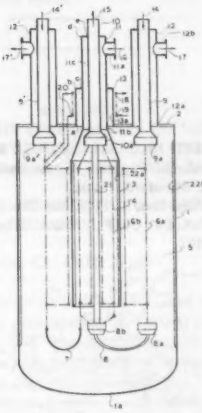
a closed axially elongated cylindrical vessel formed at one end with a cover and at the other end with a bottom;

a cylindrical partition extending from said cover toward said bottom and terminating short of said bottom while subdividing the interior of said vessel into a cylindrical space within said partition and a cylindrical outer space surrounding said partition, said spaces communicating with one another between an end of said partition and said bottom;

an inner tube bundle in said inner space and an outer tube bundle in said outer space, said inner and outer tube bundles being each formed by a multiplicity of heat exchanger tubes;

means connecting the tubes of said outer bundle with tubes of said inner bundle between said end of said partition and said bottom;

a central manifold pipe connected to the tubes of said inner tube bundle and at least one further manifold pipe connected to the tubes of said outer tube bundle, said manifold pipes passing through said cover for feeding a first fluid to



and removing said first fluid from said tube bundles whereby said fluid passes through said tube bundles in succession; and

a central duct coaxially spacedly surrounding said central manifold pipe externally of said vessel and communicating with said inner space, and at least one further duct spacedly surrounding coaxially a respective said further manifold pipe and communicating with said outer space for passing a second fluid through said spaces in succession, said ducts communicating with said spaces through said cover whereby all fluid feed to said tubes and spaces and all fluid discharged from said tubes and said spaces is effected through said cover.

4,263,261

METHOD FOR THE REMOVAL OF IMPURITIES FROM SODIUM ALUMINATE SOLUTION

Koichi Yamada; Takuo Harato, and Hisakatsu Kato, all of Niihama, Japan, assignors to Sumitomo Aluminium Smelting Company, Limited, Osaka, Japan

Filed Dec. 13, 1979, Ser. No. 103,349

Claims priority, application Japan, Dec. 21, 1978, 53/158935; Feb. 13, 1979, 54/15792

Int. Cl.³ C01F *7/06*

U.S. Cl. 423—121 **10 Claims**

1. A method for the removal of impurities from a sodium aluminate solution in the production of alumina from bauxite in accordance with the Bayer process or improved processes thereof, characterized by adding sodium oxalate crystals or both sodium oxalate crystals and at least one sodium salt of elements selected from vanadium and phosphorus, or double salts containing said sodium salts of elements selected from vanadium and phosphorus as seed to a sodium aluminate solution during the time period extending from after the precipitation step to before the digestion step, thereby precipitating crystals of organic substances or both crystals of organic substances and crystals of inorganic sodium salts of vanadium and

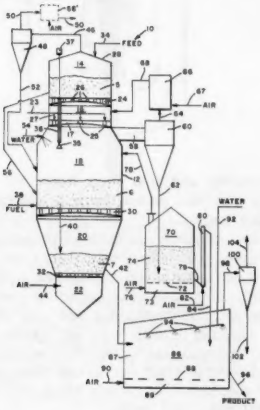
phosphorus as impurities in the sodium aluminate solution; separating the crystals from the sodium aluminate solution; dissolving about 10 to 50% by weight of an amount corresponding to the amount of the newly precipitated organic substances from the separated crystals in an aqueous unsaturated sodium oxalate solution; and then recyclically using the crystals resulting from the dissolution together with the resulting solution as seed for the precipitation of the organic substances or both the organic substances and the inorganic substances in the sodium aluminate solution.

4,263,262

FLUID BED CALCINING PROCESS

Walfred W. Jukkola, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Oct. 1, 1979, Ser. No. 80,829
Int. Cl.³ C01F *11/00*; F27B *15/00*
U.S. Cl. 423—167 **8 Claims**



8. A calcining process employing a succession of treatment zones including a preheat zone, a fluidized bed calciner and a cooling zone for benefication of phosphate rock of the "hot rock" variety containing excessive amounts of organic carbon comprising, heating the phosphate rock at an elevated temperature in a preheat zone, transferring the preheated rock to a fluidized bed calciner by discharging the rock into the freeboard of said calciner well above the surface of the fluidized bed therein, whereby a first portion of said discharged rock falls into said fluidized calcining bed and a second portion of said discharged rock undergoes pyrolysis in the elevated temperature environment of said freeboard, removing the calcined product of said calcining bed to a cooling zone, removing the hydrocarbon gas and vapor and the carbon monoxide generated by the pyrolysis reaction in said freeboard together with entrained fines from said calciner, separating the gas and vapor from the fines, passing the gas and vapor to an afterburner, introducing air into said afterburner for combustion reaction with said gas and vapor, routing the hot exhaust gases from said afterburner to said preheat zone, passing said fines to an oxidation chamber into which air is introduced and oxidizing said fines.

4,263,263

INTERNAL COMBUSTION ENGINE-EXHAUST GASES AND PARTICULATE TREATMENT

Vesper A. Vaseen, 9840 W. 35th Ave., Wheatridge, Colo. 80033

Filed Jun. 4, 1979, Ser. No. 44,964
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—212 **1 Claim**

1. A process for treating exhaust gases from an internal combustion engine which comprises:

absorbing the exhaust gases and trapping carbon particulates in an inert halogenated hydrocarbon liquid containing eight or more carbon atoms, the major halogen being fluorine,

transferring said liquid containing impurities to an oxidizer vessel and wet oxidizing the impurities at a temperature of 212° F. to 800° F. and a pressure of 5 to 100 atmospheres,

reducing the pressure on the liquor and venting the oxidized impurities to the atmosphere,

cooling the liquid from the oxidizer vessel and returning it to the absorber.

4,263,264

METHOD OF ABATING NITROGEN OXIDES IN COMBUSTION WASTE GASES

Hisashi Ikeda, Matsudo, and Shizuo Tsuchida, Tokyo, both of Japan, assignors to Nihon Cement Company Limited, Tokyo, Japan

Continuation of Ser. No. 886,654, Mar. 15, 1978, abandoned. This application Feb. 26, 1980, Ser. No. 124,751
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—239 **4 Claims**

1. A method for decreasing the nitrogen oxides in hot waste gases from the thermal decomposition product of cement raw materials in a kiln, comprising

(a) passing the hot waste gases containing the decomposition product of the raw material from the kiln into a first jet zone above the kiln,

(b) feeding fuel and additional ground raw material into the jet zone under conditions of insufficient oxygen supply so as to result in incomplete combustion of the fuel and formation of a reducing atmosphere in the jet zone,

(c) mixing the waste gas and the thermal decomposition product in said jet zone to cause reduction of the nitrogen oxides in the waste gases through the catalytic action of the decomposition product,

(d) forming a suspension zone (II) of the ground raw material above said jet zone,

(e) feeding fuel and raw material to said suspension zone while supplying zone (II) with a sufficient amount of air for the complete combustion of the fuel as well as any unburned fuel ascending from said jet zone (I), thereby calcining the raw material and by utilizing an endothermic decomposition reaction, burning said fuel and unburned fuel from the jet zone, and

(f) forming a gas mixing zone (III) above said suspension zone (II), and conducting the waste gases that have resulted from the combustion in said suspension zone (II) into said gas mixing zone (III) of a furnace body including a constriction of a gas flow passage formed immediately above said suspension zone, a dome on the inner surface of which the gas stream impinges, and an enlarged space, thus producing a mixing action due to changes in the velocity and direction of the combustion waste gas flow within said vessel and thereby burning the remaining unburned fuel in said combustion gases.

4,263,265

PROCESS FOR OBTAINING A DESULFATED PHOSPHORIC ACID FOR USE IN FOODS AND BEVERAGES

Louis Winand, Bourgachard, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Sep. 25, 1979, Ser. No. 78,675
Claims priority, application France, Sep. 29, 1978, 78 27887
Int. Cl.[3] C01B *25/16;* C01F *1/00*
U.S. Cl. 423—321 S 24 Claims

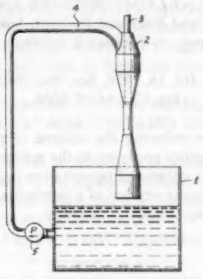
1. In a process for the preparation of wet process phosphoric acid comprising the extraction of an impure aqueous solution of phosphoric acid, obtained from the attack of sulfuric acid on natural phosphated rock, with a substantially water-insoluble organic solvent, to afford a substantially water-insoluble organic phase containing phosphoric acid contaminated with sulfuric acid, followed by re-extraction of said substantially water-insoluble organic phase with an aqueous phase, and separation of the aqueous phase containing purified phosphoric acid from the organic solvent phase; the improvement comprising: contacting said substantially water-insoluble organic phase containing phosphoric acid contaminated with sulfuric acid with an aqueous solution containing a stoichiometric excess of barium ions relative to the amount of sulfate ions in the organic phase, whereby sulfate ions are extracted from the organic phase and barium sulfate is precipitated into the aqueous phase; separating the organic phase and the aqueous phase; and recovering the organic phase containing phosphoric acid substantially reduced in sulfate ion content, the recovered organic phase containing phosphoric acid having a SO_4/P_2O_5 weight ratio of less than 100 ppm and being substantially free of barium ions.

4,263,266

PROCESS FOR THE PREPARATION OF CRYSTALLINE, ALKALINE, ALUMINOSILICATE

Max Michel, Yerres; Georges Vrisakis, Collonges; Laurent Seigneurin, and Gilbert Bouge, both of Salindres, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 911,951, Jun. 2, 1979, abandoned. This application Oct. 18, 1979, Ser. No. 86,128
Claims priority, application France, Jun. 3, 1977, 77 16991
Int. Cl.[3] C01B *33/28*
U.S. Cl. 423—329 23 Claims



1. In a process for the preparation of a crystalline, alkali metal aluminosilicate of type 4A by reaction between an aqueous solution of an alkali metal silicate and an aqueous solution of an alkali metal aluminate, the improvement which comprises:

(i) introducing a flow of at least a portion of at least one of said reactant solutions into a reaction zone;

(ii) co-introducing with said flow (i) an in line flow of at least a portion of the other reactant solution into said reaction zone;

(iii) thus establishing in said reaction zone a liquid admixture of said aqueous reactant solutions and said liquid admixture comprising a gel-formation medium;

(iv) establishing gel-formation elevated temperatures within said gel-formation medium to effect formation of a mixture comprising an aluminosilicate gel-phase and a mother liquor;

(v) recycling said gel-phase/mother liquor to said flow (i);

(vi) maintaining said gel-phase comprising said gel-formation medium under such elevated temperatures for such period of time as to effect crystallization of the aluminosilicate, and whereby a suspension of aluminosilicate crystals of type 4A in liquid phase results; and

(vii) thence recovering said aluminosilicate crystals from said resulting liquid phase.

4,263,267

PROCESS FOR THE PRODUCTION OF NITRIC ACID

Arnold Henckens, and Erich Scheibler, both of Dortmund, Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,670
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2850054
Int. Cl.[3] C01B *21/40*
U.S. Cl. 423—393 3 Claims

1. A process for the production of nitric acid with a concentration of 50–65% by compression of reaction gases and their absorption in water, said reaction gases originating from an ammonia combustion process, containing nitrogen oxides, and being under pressure, said process comprising:

(a) cooling said reaction gases by passing them through a gas cooler and feeding the cooled reaction gases to a first absorption stage without substantial further compression,

(b) raising the pressure of the gases leaving said first absorption stage by a factor of at least 1.8,

(c) feeding the compressed gases leaving said first absorption stage to a second absorption stage after the gases have been cooled by heat exchange against a tail gas from said second absorption stage,

(d) feeding the raw acid bottom product from said first absorption stage to an acid degassing unit to degas it,

(e) feeding the acid condensate from said gas cooler to adjacent the top of said first absorption stage together with at least part of the bottom product from said second absorption stage, and

(f) recovering the acid product from the bottom of said degassing unit.

4,263,268

PREPARATION OF POROUS CARBON

John H. Knox, Edinburgh, and Mary T. Gilbert, Musselburgh, both of Scotland, assignors to Shandon Southern Products Limited, Runcorn, England

Filed Nov. 20, 1979, Ser. No. 96,236
Claims priority, application United Kingdom, Nov. 21, 1978, 45397/78
Int. Cl.[3] C01B *31/02*
U.S. Cl. 423—449 17 Claims

1. A method of producing porous carbon, comprising depositing carbon in the pores of a porous inorganic template material having a surface area of at least 1 m^2g-1 and thereafter removing the template material to leave a porous carbon product having a geometry corresponding to that of the template material.

4,263,269

REMOVAL OF ORGANIC CONTAMINANTS FROM AQUEOUS HYDROCHLORIC ACID

John C. Little, Danville, and Charles R. Youngson, Jr., Martinez, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 960,377, Nov. 13, 1978, abandoned. This application May 5, 1980, Ser. No. 146,723

Int. Cl.[3] C01B *7/07*

U.S. Cl. 423—488 8 Claims

1. A method of removing organic contaminants from aqueous hydrochloric acid which comprises countercurrently contacting said aqueous acid with steam or reboiled aqueous acid vapors under superatmospheric pressure conditions of from 30 to 250 psig, thereby removing organic contaminants therefrom, and thereafter recovering a purified, aqueous hydrochloric acid solution substantially free from organic contaminants.

4,263,270

PROCESS FOR WORKING-UP HYDROGEN SULPHIDE-CONTAINING GASES

Willem Groenendaal, and Colin G. Harvey, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 7, 1977, Ser. No. 775,357

Claims priority, application United Kingdom, Mar. 8, 1976, 9194/76

Int. Cl.[3] C01B *17/04*

U.S. Cl. 423—573 R 3 Claims

1. In a process for the work-up of a hydrogen sulphide-containing gas feedstock for a Claus unit, said gas feedstock containing high amounts of carbon dioxide, in which process the sulphur-containing constituents of the gas are converted to elemental sulphur in a Claus plant, the sulphur formed being removed from the process, the reaction off-gases are passed together with a free hydrogen-and/or free carbon monoxide-containing gas at a temperature above 175° C. over a sulphided Group VI and/or Group VIII metal catalyst supported on an inorganic oxidic carrier, and whereafter the reduced off-gases thus obtained are passed through a liquid and regenerable absorbent for hydrogen sulphide and the unabsorbed portion of the said reduced off-gases is discharged into the atmosphere, the hydrogen sulphide-enriched absorbent being regenerated and used again for further absorption of hydrogen sulphide and the hydrogen sulphide-rich gas mixture liberated in the regeneration is passed to a Claus plant, the improvement wherein from 40 to 70 percent of the hydrogen sulphide-containing gas feedstock, comprising above 20% by volume of carbon dioxide, by-passes the Claus plant and is contacted directly with the liquid and regenerable absorbent for hydrogen sulphide, said absorbent also being CO_2 selective.

4,263,271

PROCESS FOR ELIMINATING HYDROGEN SULFIDE FROM GAS MIXTURES

Klaus-Dirk Henning; Harald Jüntgen, and Jürgen Klein, all of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 886,910, Mar. 15, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 68,321

Int. Cl.[3] C01B *17/04*

U.S. Cl. 423—573 G 11 Claims

1. A process for the elimination of sulfur compounds, including hydrogen sulfide, from gas mixtures by means of adsorbers containing activated carbon, of the type wherein a feed gas mixture together with oxygen and/or sulfur dioxide is passed successively through at least two adsorbers respectively constituting a first and a second adsorbing stage, the improvement comprising maintaining a temperature during both stages above the melting point of sulfur and passing the gas through the first stage in such manner that the predominant portion of the elemental sulfur flows out in liquid form whereupon the residual elemental sulfur is passed in vaporous or mist-like form into the second stage, the first stage being continuously subjected to auto-regeneration and the necessity for regeneration of the carbon in the second stage being decreased because of the reduced amount of sulfur charged into the second stage.

4,263,272

PHARMACEUTICAL COMPOSITION OF PROLONGED ACTION CONTAINING BILE ACIDS

Giuliano E. Frigerio, Bresso, Italy, assignor to Lehner AG, Muttenz, Switzerland

Filed Dec. 13, 1979, Ser. No. 103,108

Claims priority, application Italy, Dec. 15, 1978, 30933 A/78

Int. Cl.[3] A61K *9/22, 9/24, 9/26, 31/575*

U.S. Cl. 424—19 22 Claims

1. A pharmaceutical composition for oral use containing a bile acid as active principles adapted to lyse calculi of cholesterol origin, characterized by containing excipients which allow the active principle to be released over a protracted time period and, said active principle being present in an amount of 450–500 mg, said amount being the therapeutic daily dose, to be consumed in one taking.

4,263,273

PHARMACEUTICAL PREPARATION COMPRISING A CARDIAC GLYCOSIDE WITH A POLYMER COATING

Curt H. Appelgren, V Frölunda; Conny B. Bogentoft, Kallered, and John A. Sjögren, Mölnlycke, all of Sweden, assignors to Aktiebolaget Astra, Molndal, Sweden

Filed Dec. 17, 1979, Ser. No. 104,689

Claims priority, application Sweden, Dec. 22, 1978, 7813246

Int. Cl.[3] A61K *9/22, 9/24, 31/705*

U.S. Cl. 424—21 9 Claims

1. A pharmaceutical preparation comprising a cardiac glycoside with a polymer coating, characterized in that said pharmaceutical preparation is in the form of a plurality of small bodies, each body comprising a fraction of a therapeutically effective dosage of the cardiac glycoside, whereby each body has a core made up of pharmaceutically indifferent material, and on said core a first layer made up of a composition comprising the cardiac glycoside, and thereon a second layer comprising an anionic carboxylic polymer being difficultly soluble or insoluble below a given pH value in the interval of pH 4–7.5 but being soluble at a pH above said given value.

4,263,274

ANTIPERSPIRANT COMPOSITIONS AND METHODS

Arun B. Kulkarni, and Kakubhai R. Vora, both of East Brunswick, N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jul. 16, 1976, Ser. No. 706,082

Int. Cl.[3] A61K *9/14*

U.S. Cl. 424—46 8 Claims

1. A method for reducing the volume of perspiration produced which comprises applying to the epidermal surface area where reduction in volume of perspiration is desired, a perspiration volume reducing amount of a substantially water-insoluble aldehyde polysaccharide compound.

4,263,275

HYDROALCOHOLIC AEROSOL HAIR SPRAYS CONTAINING CORROSION INHIBITORS

Arun Nandagiri, Dover, N.J., assignor to American Cyanamid Company, Stamford, Conn.

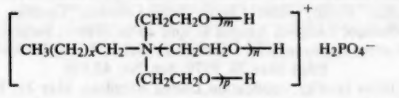
Continuation-in-part of Ser. No. 68,247, Aug. 20, 1979, abandoned. This application Oct. 5, 1979, Ser. No. 82,260

Int. Cl.[3] A61K *7/11*

U.S. Cl. 424—47 3 Claims

1. A hair spray composition comprising (a) about 60 to 90 percent by weight of a liquid concentrate phase, and (b) about 10 to 40 percent by weight of a propellant phase selected from the group consisting of propane, n-butane, isobutane, or mixtures thereof; said liquid concentrate phase, based on the total

weight of (a) and (b), consists of from about 1 to 7% of a film-forming polymeric material; from 2 to 40 percent by weight water; from 0.05 to 0.6 weight percent of an organic base neutralizer; 0.1 to 3 percent by weight of a phosphate salt of a quaternary ammonium compound represented by the formula:



wherein x is an integer from about 12 to 18 and m, n, and p are integers the sum of which total from about 3 to 12 as a corrosion inhibitor; and sufficient ethanol or isopropanol, or mixture thereof, to total 100 percent.

4,263,276

DENTIFRICES

Kenneth Harvey, Wilmslow, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,598

Claims priority, application United Kingdom, May 19, 1978, 20759/78

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **11 Claims**

1. A visually clear dentifrice in a lined aluminum tube, said dentifrice comprising a dentifrice vehicle containing at least about 3% by weight of water, from 5% to 50% by weight of a siliceous polishing agent having am empirical SiO_2 content of at least 70%, a particle size in the range from 1 to 35 microns, a substantially amorphous X-ray structure and an index of refraction between 1.44 and 1.47; an aqueous liquid vehicle having a refractive index matching that of said siliceous polishing agent; a compound which provides fluorine in amount to provide from 0.01% to 1% by weight of a fluorine selected from alkali metal fluoride and alkali metal monofluorophosphate; from 0.0007% to 0.05% by weight of a water-soluble non-toxic red or yellow monoazo dye or blue triarylmethane dye; and from 0.05% to 5% by weight of benzoic acid as an additive which prevents or reduces color fading.

4,263,277

COLD PERMANENT WAVE COMPOSITION AND METHOD CONTAINING 2-IMINOTHIOLANE

Uma P. Tripathi, Oakland, N.J., and Diana K. Tomaszewicz, Timonium, Md., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 20, 1979, Ser. No. 50,359

Int. Cl.³ A61K *7/09;* **A45D** *7/00*

U.S. Cl. 424—72 **6 Claims**

1. A composition for producing a permanent wave in hair consisting essentially of an aqueous solution of 4 to 8 percent by weight of 2-iminothiolane and a water soluble base having a dissociation constant of at least 5×10^{-3} in an amount to impart a pH of 9.2 to 9.5 to said composition.

4,263,278

MORTUARY COMPOSITION

Vincent R. Saurino, 1099 Banyan Rd., and Bruce C. Saurino, 480 NW. 20th St., Apt. #214, both of Boca Raton, Fla. 33432

Filed Jul. 10, 1979, Ser. No. 56,308

Int. Cl.³ A01N *1/00*

U.S. Cl. 424—75 **12 Claims**

1. A method of preserving and embalming a human cadaver which comprises applying thereto a composition comprising as active ingredients:

(a) a synergistic mixture of about 5–95% of an n-C_{12-18}-alkyl-dimethyl-benzyl-ammonium halide and about 95–5% of an n-C_{12-14}-dimethyl-ethylbenzyl-ammonium halide,

(b) a water soluble or water dispersible ester of bis-(tri-n-butyl-tin)-oxide; there being about 1–200 parts of (a) for each part of (b); and

(c) a non-ionic surface active agent in an amount of about at least 0.05% and up to 30 times the amount of (a) and (b), wherein said composition is adapted and applied to be biologically active against a wide variety of organisms.

4,263,279

PHARMACEUTICALLY ACTIVE COMPOSITIONS CONTAINING ADRIAMYCIN AND DAUNOMYCIN

Michael Sela; Ruth Arnon; Esther Hurvitz, all of Rehovot; Ruth Maron, Tel Aviv, and Ron Levy, Rehovot, all of Israel, assignors to Yeda Research & Development Co. Ltd, Rehovot, Israel

Division of Ser. No. 605,870, Aug. 19, 1975, abandoned. This application Jul. 24, 1978, Ser. No. 927,051

Int. Cl.³ A61K *31/705;* **C07H** *15/24*

U.S. Cl. 424—85 **4 Claims**

1. A compound consisting of daunomycin or adriamycin covalently bonded to an antibody selective or specific to the antigen of a tumor against which tumor the daunomycin or adriamycin is effective, wherein the functional groups of the daunomycin or adriamycin and of the antibody which are reacted to form the covalent linkage of the daunomycin or adriamycin and the antibody are ones which are not necessary for the pharmaceutical activity of the daunomycin or adriamycin or the selectivity or specificity of the antibody.

4. A pharmaceutical composition, in injectable form, containing from 50 mg to 500 mg of the compound of claim 1 in a pharmaceutically acceptable carrier.

4,263,280

SYNERGISTIC MIXTURES

Friedrich Kradolfer, Basel, and Otokar Zak, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,032

Claims priority, application Switzerland, Apr. 19, 1978, 4194/78

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—114 **3 Claims**

1. A synergistic mixture comprising cefsulodin sodium and gemtamicin C in the weight ratio of between 1:0.0008 and 1:5.

4,263,281

OXAALKANOATE ANTI-ULCER COMPOSITION

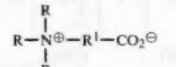
Robert G. Laughlin, and Juian-Juian L. Fu, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 16, 1979, Ser. No. 57,922

Int. Cl.³ A61K *33/00, 33/12, 33/08, 31/205*

U.S. Cl. 424—155 **11 Claims**

1. A composition of matter for treating or preventing ulcers in humans or lower animals in unit dosage form for oral administration, comprising: (a) a safe and effective amount of a zwitterionic compound of the formula



wherein: at least one R group is a lipophilic hydrocarbyl substituent containing greater than about 10 carbon atoms, and the remaining R groups are hydrocarbyl moieties containing 10 or fewer carbon atoms; and R^1 is an alkylene oxide moiety with a chain length no greater than about 11 total atoms, or an ester salt thereof; and (b) the balance of the composition comprising a pharmaceutically-acceptable carrier.

4,263,282

LH-RH-PEPTIDES AS CONTRACEPTIVES

Marianne von der Ohe, Wiesbaden; Jürgen K. Sandow, Königstein, and Wolfrad von Rechenberg, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 930,651, Aug. 6, 1977, abandoned. This application Nov. 20, 1979, Ser. No. 96,029

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735515

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 2 Claims

1. The method of inducing a contraceptive effect in a male of female patient which comprises parenterally administering to said patient, over a period of at least four days, a daily dose from 0.05 to 1.0 micrograms per kilogram of body weight of a peptide of the formula

Glu-His-Trp-Ser-Tyr-X-Leu-Arg-Pro-NHC_2H_5

wherein X is D-serine-tert.butyl ether or D-glutamic acid δ-cyclohexyl amide.

4,263,283

METHOD FOR PROPHYLAXIS AND/OR TREATMENT OF SICKLE CELL DISEASE

Joseph H. Cort, New York, N.Y., assignor to Ferring Pharmaceuticals, Inc., New York, N.Y.

Filed May 16, 1980, Ser. No. 150,634

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 6 Claims

1. A method for the prophylaxis or treatment of sickle cell disease which comprises administering to a human patient 1-deamino-8-D-arginine vasopressin in an effective amount.

4,263,284

HAND CLEANING COMPOSITION

J. C. P. Schreuder, 712 Veenbesstraat, Soest, Netherlands

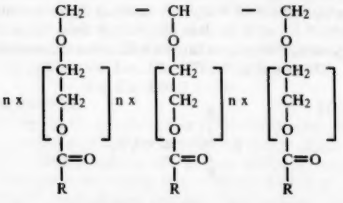
Filed Jun. 27, 1979, Ser. No. 52,827

Claims priority, application Netherlands, Jun. 30, 1978, 7807077

Int. Cl.[3] A61K *7/50, 31/725;* C11D *3/43, 3/48*

U.S. Cl. 424—180 19 Claims

1. A skin cleaning agent comprising (A) a continuous oil phase consisting essentially of 20 to 60% by weight of the composition of straight or branched paraffinic oils of 10 to 30 carbon atoms in the chain, (B) a dispersed aqueous emulsified phase, (C) a buffer consisting essentially of lactic acid and triethanolamine for maintaining the normal pH of the outer skin tissue layers, (D) an emulsifying system consisting essentially of mono- and diglycerides of higher natural fatty acids and ethoxylated glycerine esterified with fatty acids of the formula



wherein n is a number between 20 to 45, the Rs are individually a saturated or unsaturated fatty acid residue derived from animal or vegetable oils, the ratio of mono- and diglycerides to ethoxylated triglycerides is 10 to 100 parts to one and are 1 to 5% by weight of the composition (E) 0.5 to 5% by weight of the composition of glycerine and (F) caraghenates optionally modified by esterification of the sulfonic acid residues with lower alcohols.

4,263,285

GLOBULARIA EXTRACT, ITS METHOD OF PREPARATION AND ITS USE AS PHARMACEUTICAL

Jacques Debat, Saint Cloud; Jean Lemoine, Garches, and Monique Longuet, Auteuil le Roi, all of France, assignors to Societe Anonyme dite: Laboratoire Debat, Paris, France

Filed May 30, 1979, Ser. No. 43,816

Claims priority, application United Kingdom, May 31, 1979, 25619/79

Int. Cl.[3] A01N *9/02*

U.S. Cl. 424—195 8 Claims

1. A method of preparation of an extract of Globularia which is useful in human and veterinary therapy which comprises the steps of:

(a) extracting 10 to 120 g of a ground dried plant of Globularia alypum, Globularia vulgaris or related species of the Globulariaceae family, under reflux for 15 minutes to 5 hours with 1 liter of a solvent selected from the group consisting of water, alcohols, ketones, ethers, esters, hydrocarbons, halogenated hydrocarbons and mixtures thereof;

(b) filtering the resulting extract and subjecting the filtrate to evaporation to dryness under reduced pressure, nebulisation or lyophilisation;

(c) subjecting the resulting product thus obtained, to a second extraction at 15°–25° C. for 2 to 4 hours with a solvent differing from the extraction solvent of step (a) by its polarity, and selected from the group consisting of water-alcohol mixtures, alcohols, ketones, methylene chloride, chloroform and mixtures thereof in a ratio of 50 to 300 ml solvent per gram of said resulting product;

(d) filtering the resulting extract and evaporating the resulting filtrate to dryness under reduced pressure.

4,263,286

THERAPEUTIC AGENT FOR CONSCIOUSNESS DISORDER AND PERCEPTION AND MOVEMENT DISORDER

Tadashi Nakajima, Takatsuki; Kyoji Rikimi, Osaka; Yasuji Soda, Kobe; Kenichi Kashima, Fujiidera; Akira Miyamoto, Nishinomiya, and Yoshikazu Soejima, Osaka, all of Japan, assignors to Nippon Shoji Kaisha, Ltd., Osaka, Japan

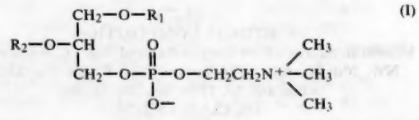
Division of Ser. No. 16,340, Feb. 28, 1979, abandoned. This application May 5, 1980, Ser. No. 146,215

Claims priority, application Japan, Feb. 28, 1978, 53/22385

Int. Cl.[3] A23J *7/00;* A61K *31/685*

U.S. Cl. 424—199 12 Claims

1. A method for treating consciousness disorder and perception and movement disorder which comprises treating a person suffering from said disorders by administering a therapeutically effective amount of a phosphatidylcholine of the formula:



(I)

wherein R_1 and R_2 are the same or different and are each hydrogen, a residue of a saturated fatty acid having 6 to 22 carbon atoms, or residue of an unsaturated fatty acid having 14 to 20 carbon atoms, provided that at least one of R_1 and R_2 is a residue of the said saturated or unsaturated fatty acid.

4,263,287
FENVALERATE-PHOSMET INSECTICIDAL COMPOSITION

Stephan Dennis, Marlboro, N.J., assignor to Stauffer Chemical Company, Richmond, Calif.

Filed Nov. 2, 1979, Ser. No. 90,782
Int. Cl.³ A01N *37/34, 57/00, 57/26*
U.S. Cl. 424—200 **7 Claims**

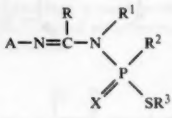
1. An insecticidal composition comprising insecticidal amounts of phosmet and fenvalerate in a weight ratio of phosmet:fenvalerate of between 20:1 and 100:1.

4,263,288
ACARICIDAL, INSECTICIDAL, AND NEMATOCIDAL PHOSPHORAMIDOTHIOATES

Janet Ollinger, North Wales, and Horst O. Bayer, Levittown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 866,597, Jan. 3, 1978, abandoned. This application Nov. 27, 1978, Ser. No. 964,214
Int. Cl.³ C07F *9/24;* **A01N** *57/30*
U.S. Cl. 424—210 **27 Claims**

1. A compound of the formula:



wherein

A is an unsubstituted (C_6–C_{10}) aryl group; or a (C_6–C_{10}) aryl group substituted with up to three substituents selected from the group consisting of cyano, nitro, halogen, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, (C_1–C_6) alkylthio, acetoxy, trifluoromethyl, (C_1–C_6) alkylaminocarbonyl, di-(C_1–C_6) alkylaminocarbonyl, halo (C_1–C_6) alkyl, (C_1–C_6) alkylsulfinyl, (C_1–C_6) alkylsulfonyl, C_6–C_{10}) aryloxy, (C_6–C_{10}) arylthio, arylsulfinyl, arylsulfonyl or (C_1–C_6) alkylcarbonyl;

R is a hydrogen atom or an unsubstituted (C_1–C_6) alkyl group;

R^1 is

(a) an unsubstituted (C_1–C_6) alkyl group, or a (C_1–C_6) alkyl group substituted with one substituent selected from the group consisting of cyano, furyl, (C_1–C_6) alkoxy, (C_1–C_6) alkylthio, (C_1–C_6) alkylsulfinyl, (C_1–C_6) alkylsulfonyl, (C_3–C_6) alkenyloxy, (C_3–C_6)alkenyloxycarbonyl, (C_1–C_6) alkylcarbonyl, (C_1–C_6) alkoxycarbonyl, (C_1–C_6)-alkylcarbonyloxy, mono- or di-(C_1–C_6) alkylaminocarbonyl, di-(C_1–C_6) alkylamino, (C_6–C_{10}) aryloxy, (C_6–C_{10}) arylthio, (C_6–C_{10}) arylsulfinyl, (C_6–C_{10}) arylsulfonyl, (C_6–C_{10}) arylcarbonyl, (C_6–C_{10}) aryloxycarbonyl, (C_6–C_{10}) arylaminocarbonyl;

(b) an unsubstituted (C_3–C_8) cycloalkyl group;

(c) an unsubstituted (C_3–C_6) alkenyl group or a (C_3–C_6) alkenyl group with up to two substituents selected from the group consisting of cyano, halogen, (C_1–C_6) alkoxycarbonyl, and an unsubstituted (C_6–C_{10}) aryl group or a (C_6–C_{10}) aryl group substituted with up to three substituents selected from the group consisting of cyano, nitro, halogen, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, (C_1–C_6) alkylthio, (C_1–C_6) alkylaminocarbonyl, di-(C_1–C_6) alkylaminocarbonyl, and halo (C_1–C_6) alkyl;

(d) an unsubstituted (C_3–C_6) alkynyl group;

(e) an unsubstituted aralkyl group of up to 11 carbon atoms, or an aralkyl group of up to 11 carbon atoms the aryl portion of which is substituted with up to three substituents selected from the group consisting of cyano, nitro, halogen, (C_1–C_6) alkyl, (C_1–C_6) alkoxy, (C_1–C_6) alkylthio, (C_1–C_6) alkylaminocarbonyl, di-(C_1–C_6) alkylaminocarbonyl and halo (C_1–C_6) alkyl;

R^2 is

(a) (C_1–C_6) alkylthio;

(b) (C_6–C_{10}) aryloxy; or

(c) a group of the formula NZ'Z" wherein Z' is hydrogen, (C_1–C_6) alkyl, Z" is hydrogen or (C_1–C_6) alkyl; or (C_3–C_6) alkenyl, di(C_1–C_3)alkyl amino, 2-ethylthioethyl 2-methoxyethyl or (C_1–C_4) alkoxycarbonylalkyl (C_1–C_4);

R^3 is unsubstituted (C_1–C_6) alkyl; and

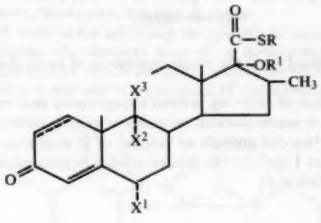
X is oxygen or sulfur.

4,263,289
THIO ETIANIC ACID DERIVATIVES

John A. Edwards, Los Altos, Calif., assignor to Syntex U.S.A. Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 893,388, Jun. 5, 1978, Pat. No. 4,188,385. This application Aug. 31, 1979, Ser. No. 71,635
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—238 **7 Claims**

1. A compound chosen from these represented by the formula



(I)

wherein

X^1 is hydrogen or fluoro;

X^2 is hydrogen, fluoro or chloro;

X^3 is

or may also be

when X^2 is chloro;

R is alkyl of 1 through 6 carbon atoms;

R^1 is alkanoyl of two through six carbon atoms; and

the solid and broken lines between C-1 and C-2 represent a double or single bond.

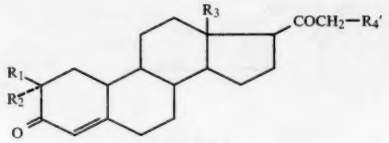
5. A topical anti-inflammatory pharmaceutical composition which comprises a therapeutically effective amount of the compound of claim **1** in combination with at least one suitable pharmaceutical excipient.

4,263,290
NOVEL 19-NOR-STEROIDS

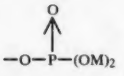
Lucien Nedelec, Le Raincy; Vesperto Torelli, Maisons-Alfort, and Robert Fournex, Paris, all of France, assignors to Roussel Uclaf, Romainville, France

Filed Nov. 30, 1979, Ser. No. 98,766
Claims priority, application France, Dec. 13, 1978, 78 35046
Int. Cl.[3] A61K *31/56;* C07J *5/00*
U.S. Cl. 424—243 33 Claims

1. A 19-nor-steroid of the formula



wherein R_1 and R_2 taken together form a cycloalkyl of 3 to 8 carbon atoms or are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 6 carbon atoms with the proviso that both cannot be hydrogen, R_3 is alkyl of 2 to 4 carbon atoms, R_4' is selected from the group consisting of hydrogen, hydroxyl, acyloxy of an organic carboxylic acid of 1 to 18 carbon atoms and



and M is selected from the group consisting of hydrogen and alkali metal.

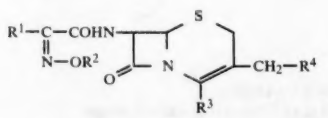
21. A method of relieving arterial hypertension and cardiac insufficiency in warm-blooded animals comprising administering to warm-blooded animals an amount of at least one compound of claim 1 sufficient to relieve arterial hypertension and cardiac insufficiency.

4,263,291
3,7-DISUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS AND PROCESSES FOR THE PREPARATION THEREOF

Takao Takaya, Sakai; Hisashi Takasugi, Osaka; Toshiyuki Chiba, Nara, and Zenzaburo Tozuka, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 839,974, Oct. 6, 1977, abandoned. This application Apr. 3, 1979, Ser. No. 26,779
Claims priority, application United Kingdom, Oct. 8, 1976, 42057/76
Int. Cl.[3] A61K *31/545;* C07D *501/56*
U.S. Cl. 424—246 7 Claims

1. 3,7-disubstituted-3-cephem-4-carboxylic acid (syn isomer) compounds of the formula:



wherein

R^1 is 1,2,3-thiadiazolyl;

R^2 is lower alkyl;

R^3 is carboxy or carboxy group protected by an eliminatable protective group; and

R^4 is tetrazolylthio which may be substituted with lower alkyl or di(lower)alkylamino(lower)alkyl; and pharmaceutically acceptable salts thereof.

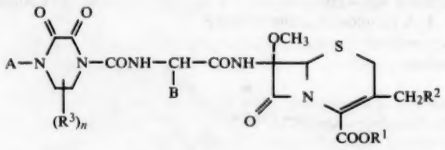
7. An antibacterial composition comprising a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,263,292
7 α-METHOXYCEPHALOSPORINS AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Isamu Saikawa; Shuntaro Takano; Hiroyuki Imaizumi; Isamu Takakura; Hirokazu Ochiai; Takashi Yasuda, all of Toyama; Hideo Taki, Tokyo; Masaru Tai, and Yutaka Kodama, both of Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 926,939, Jul. 21, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,835
Claims priority, application Japan, Jun. 13, 1978, 53-70417; Apr. 23, 1979, 54-49001; Aug. 7, 1979, 54-99917
Int. Cl.[3] A61K *31/545;* C07D *501/57*
U.S. Cl. 424—246 16 Claims

1. A 7α-methoxycephalosporin or salt thereof, said 7α-methoxycephalosporin being represented by the formula:



wherein

R′ represents a hydrogen atom or a carboxyl-protecting group;

R^2 represents a substituted or unsubstituted lower alkoxy, lower alkylthio, $C_{1\text{-}10}$ acyloxy, carbamoyloxy or heterocyclic thio group in which the thio linkage is attached to a carbon atom of a 5 or 6 membered aromatic heterocyclic ring composed of carbon and at least one hetero atom selected from oxygen, sulfur and nitrogen, the heterocyclic moiety of said heterocyclic thio group being composed of said aromatic heterocyclic ring or of said aromatic heterocyclic ring fused to a benzene ring or being triazolopyridyl, purinyl, or pyridine-1-oxide-2-yl, the substituent of the substituted group being selected from a halogen, lower alkyl, phenyl, $C_{2\text{-}5}$ alkenyl, hydroxyl, lower alkoxy, lower alkylthio, nitro, cyano, lower alkylamino, di-lower alkylamino, $C_{1\text{-}10}$ acylamino, $C_{1\text{-}10}$ acyl, $C_{1\text{-}10}$ acyloxy, $C_{1\text{-}10}$ acyl-lower alkyl, carboxyl, carbamoyl, amino-lower alkyl, N-lower alkylamino-lower alkyl, N,N-di-lower alkyl-amino-lower alkyl, hydroxy-lower alkyl, hydroxyimino-lower alkyl, lower alkoxy-lower alkyl, carboxy-lower alkyl, sulfo-lower alkyl, sulfo, sulfamoyl-lower alkyl, sulfamoyl, carbamoyl-lower alkyl, carbamoyl-$C_{2\text{-}5}$ alkenyl, and N-hydroxycarbamoyl-lower alkyl;

R^3 represents a lower alkyl group;

n is 0, 1 or 2;

A represents a hydrogen atom or a straight- or branched-chain $C_{1\text{-}14}$ alkyl group which is unsubstituted or substituted with a halogen, lower alkoxy, cyano, nitro, carboxyl, lower alkoxycarbonyl, hydroxyl, lower alkylthio or $C_{1\text{-}10}$ acyl group; and

B represents a straight- or branched-chain $C_{1\text{-}14}$ alkyl group which is unsubstituted or substituted with a halogen, hydroxyl, protected hydroxyl, $C_{1\text{-}10}$ acyl, mercapto, lower alkylthio, nitro, amino, protected amino, imino, protected imino or carboxyl group.

15. A pharmaceutical composition useful for treating bacteria infections in man and mammals which comprises an antibacterially effective amount of a compound or its pharmaceu-

tically acceptable salt as claimed in claim **1**, in combination with a pharmaceutically acceptable inert diluent or carrier.

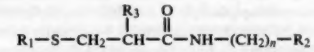
4,263,293

HETEROCYCLIC CONTAINING AMIDES AS INHIBITORS OF MAMMALIAN COLLAGENASE

Joseph E. Sundeen, Yardley, Pa., and Tamara Dejneka, Skillman, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 30, 1980, Ser. No. 154,748
Int. Cl.[3] A61K *31/535, 31/445;* **C07D** *295/14*
U.S. Cl. 424—248.5 **10 Claims**

1. A compound having the formula



wherein

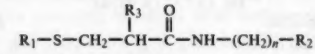
R_1 is hydrogen, alkanoyl of 2 to 10 carbon atoms or arylcarbonyl;

R_2 is 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, or 4-alkyl-1-piperazinyl;

R_3 is alkyl of 3 to 8 carbon atoms, cycloalkyl, aryl, or arylalkyl; and

n is an integer of 1 to 20.

9. A method for reducing the adverse effects of mammalian collagenase in a mammal host in need thereof, which comprises administering to said mammal an effective amount of a compound having the formula



wherein

R_1 is hydrogen, alkanoyl of 2 to 10 carbon atoms or arylcarbonyl;

R_2 is 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, or 4-alkyl-1-piperazinyl;

R_3 is alkyl of 3 to 8 carbon atoms, cycloalkyl, aryl, or arylalkyl; and

n is an integer of 1 to 20.

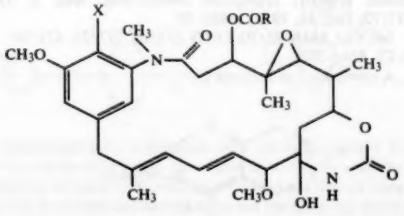
4,263,294

MAYTANSINOIDS, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

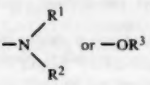
Osamu Miyashita, Osaka, and Hiroshi Akimoto, Nishinomiya, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 13, 1979, Ser. No. 93,742
Claims priority, application Japan, Nov. 20, 1978, 53-143857; Jan. 22, 1979, 54-6307
Int. Cl.[3] A61K *31/535;* **C07D** *498/16, 521/00*
U.S. Cl. 424—248.54 **9 Claims**

1. A compound of the formula:



wherein X is H or Cl, and R is



wherein R^1 and R^2 may be the same or different, and each is H or a hydrocarbon residue of the class consisting of C_{1-18} alkyl, R_{1-18} alkenyl, C_{3-10} cycloalkyl to which a benzene ring may be fused, C_{3-10} cycloalkenyl, C_{3-10} cycloalkyl-C_{1-6} alkyl, C_{3-10} cycloalkenyl-C_{1-6}alkyl, phenyl, naphthyl, phenyl-C_{1-6} alkyl, phenyl-C_{3-10} cycloalkyl, C_{3-10} cycloalkylphenyl, biphenyl, or a heterocyclic group of the class consisting of azetidinyl, pyrrolyl, furyl, thienyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, pyrazolyl, imidazolyl, pyridyl, pyrimidinyl, pyrazinyl, triazinyl, quinolyl, quinazolyl, quinoxalyl, indolyl, benzofuranyl, and benzothienyl,

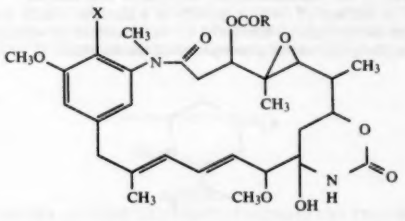
said hydrocarbon residue or heterocyclic group being unsubstituted or substituted by C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, phenoxy, phenythio, cyclohexyloxy, halogen, cyano, carboxyl, C_{2-5} alkoxycarbonyl, benzyloxycarbonyl, nitro, aminosulfonyl or di-C_{1-4} alkylamino; or

R^1 and R^2 may, taken together with the adjacent N atom, form an azetidinyl, pyrrolinyl, piperazinyl, or morpholinyl group, and

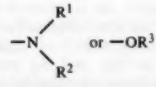
wherein R^3 is a hydrocarbon residue of the class consisting of C_{1-18} alkyl, C_{3-10} cycloalkyl, phenyl, naphthyl or phenyl-C_{1-4} alkyl,

said hydrocarbon residue being unsubstituted or substituted by C_{1-4} alkyl, halogenated C_{1-4} alkyl, C_{1-4} alkoxy, phenoxy, benzyloxy, halogen or cyano.

9. A method for inhibiting the growth of tumour cells and prolonging the survival time of a tumour-bearing warm-blooded animal, which comprises administering to said animal an effective amount of a compund of the formula:



wherein X is H or Cl, and R is



wherein R^1 and R^2 may be the same or different, and each is H or a hydrocarbon residue of the class consisting of C_{1-18} alkyl, C_{1-18} alkenyl, C_{3-10} cycloalkyl to which a benzene ring may be fused, C_{3-10} cycloalkenyl, C_{3-10} cycloalkyl-C_{1-6} alkyl, C_{3-10} cycloalkenyl-C_{1-6} alkyl, phenyl, naphthyl, phenyl-C_{1-6} alkyl, phenyl-C_{3-10} cycloalkyl, C_{3-10} cycloalkylphenyl, biphenyl, or a heterocyclic group of the class consisting of azetidinyl, pyrrolyl, furyl, thienyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, pyrazolyl, imidazolyl, pyridyl, pyrimidinyl, pyrazinyl, triazinyl, quinolyl, quinazolyl, quinoxalyl, indolyl, benzofuranyl, and benzothienyl,

said hydrocarbon residue or heterocyclic group being unsubstituted or substituted by C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, phenoxy, phenylthio, cyclohexyloxy, halogen, cyano, carboxyl, C_{2-5} alkoxycarbonyl, benzyloxycarbonyl, nitro, aminosulfonyl or di-C_{1-4} alkylamino; or

R^1 and R^2 may, taken together with the adjacent N atom, form an acetidinyl, pyrrolidinyl, piperazinyl or morpholinyl group, and

wherein R^3 is a hydrocarbon residue of the class consisting of C_{1-18} alkyl, C_{3-10} cycloalkyl, phenyl, naphthyl or phenyl-C_{1-4} alkyl,

said hydrocarbon residue being unsubstituted or substituted by C_{1-4} alkyl, halogenated C_{1-4} alkyl, C_{1-4} alkoxy, phenoxy, benzyloxy, halogen or cyano.

4,263,295

PSYCHOACTIVE 3-(1-2-DIARYLETHYL)-1,4,5,6-TETRAHYDRO-1,2,4-TRIAZINES AND THEIR METHOD OF USE

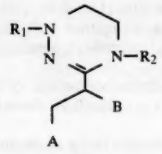
David M. Spatz, and Paul J. Widner, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 6, 1977, Ser. No. 803,927

Int. Cl.[3] **C07D** *253/06, 405/06, 405/14;* **A61K** *31/53*

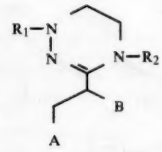
U.S. Cl. 424—249 **13 Claims**

1. An antianxiety compound of the formula



wherein A and B independently represent 1,3-benzodioxol-5-yl, phenyl, or substituted phenyl substituted with one or two moieties selected from the group consisting of lower alkyl, lower alkoxy, halo, and naphthalenyl; R_1 represents hydrogen or methyl; and R_2 represents hydrogen, methyl, or acetyl with the proviso that both A and B cannot be phenyl and further including the pharmaceutically-acceptable salts thereof.

7. A method of treating anxiety in a mammal which comprises administering internally to the mammal an effective antianxiety amount of a compound of the formula



wherein A and B independently represent naphthalenyl, 1,3-benzodioxol-5-yl, phenyl, or substituted phenyl substituted with one or two moieties selected from the group consisting of lower alkyl, lower alkoxy, halo, and naphthalenyl; R_1 represents hydrogen or methyl; and R_2 represents hydrogen, methyl, or acetyl with the proviso that both A and B cannot be phenyl and further including the pharmaceutically-acceptable salts thereof.

4,263,296

COMBATING ARTHROPODS WITH 1,3-SUBSTITUTED-(1,2,3,4,5,6H)-TRIAZINE-2,4-DIONES

Edgar Mohring, Bergish Gladbach; Peter Stadler, Haan, and Peter Roessler, Bergish Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

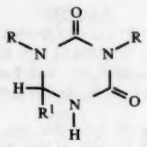
Filed Dec. 20, 1978, Ser. No. 971,292

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1978, 2801029

Int. Cl.[3] **A01N** *43/64*

U.S. Cl. 424—249 **3 Claims**

2. A method of combating arthropods which comprises applying to arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound of the formula



in which

R is methyl, ethyl, n-propyl, n-butyl, chlorohexyl, phenyl, 4-chlorophenyl, 3,4-dichlorophenyl, 4-methoxyphenyl, 2-trifluoromethylphenyl, 3-trifluoromethylphenyl, 3-chloro-4-trifluoromethylphenyl, 4-p-phenoxyphenyl, 4-(3′-trifluoromethyl)-phenoxyphenyl, 4-fluorophenyl, 4-trifluoromethylphenyl or 4-chloro-3-trifluoromethylphenyl, and

R^1 represents hydrogen, methyl, ethyl, n-propyl, isopropyl, n-butyl, chlorohexyl or phenyl.

4,263,297

3-LOWER ALKOXY-6-TRICHLOROMETHYLPYRIDAZINES AND THEIR USE AS FUNGICIDES

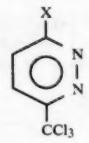
Eugene F. Rothgery, North Branford, and Hansjuergen A. Schroeder, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 20, 1977, Ser. No. 844,003

Int. Cl.[3] **A01N** *43/48*

U.S. Cl. 424—250 **2 Claims**

1. A method for controlling fungi which comprises contacting said fungi with a fungicidally effective amount of a compound having the formula:



where X is a lower alkoxy group having from 1–4 carbon atoms.

4,263,298

HYDRAZINO BICYCLIC PYRIDAZINES AS HYPERTENSIVES

Erhard Schenker, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

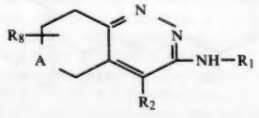
Division of Ser. No. 854,332, Nov. 23, 1977, Pat. No. 4,181,273, which is a continuation of Ser. No. 748,743, Dec. 9, 1976, abandoned, which is a continuation of Ser. No. 492,064, Jul. 26, 1974, abandoned. This application Jul. 3, 1979, Ser. No. 54,631

Claims priority, application Switzerland, Aug. 2, 1973, 11217/73; Dec. 21, 1973, 18036/73

Int. Cl.[3] **A61K** *31/50;* **C07D** *237/28, 237/26, 471/04*

U.S. Cl. 424—250 **6 Claims**

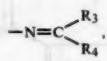
1. A compound of formula I,



I

wherein

R_1 is amino, or



wherein each of R_3 and R_4 is independently alkyl of 1 to 4 carbon atoms,

R_2 phenyl,

R_8 is hydrogen or alkyl of 1 to 4 carbon atoms, and

A, =N—CO—R_5,

wherein R_5 is alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, a —$(CH_2)_m$—R_6 group,

wherein m is an integer from 0 to 2, and

R_6 is phenyl, or phenyl monosubstituted by fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or alkylmercapto of 1 to 4 carbon atoms,

or an —OR_7 group,

wherein R_7 is alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, phenylalkyl of 7 to 10 carbon atoms, phenylalkyl of 7 to 10 carbon atoms monosubstituted in the phenyl ring by chlorine, alkoxy of 1 to 4 carbon atoms or alkyl of 1 to 4 carbon atoms; phenylalkenyl of 8 to 10 carbon atoms, or phenylalkenyl of 8 to 10 carbon atoms monosubstituted in the phenyl ring by chlorine, alkoxy of 1 to 4 carbon atoms or alkyl of 1 to 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

5. A pharmaceutical composition for use in the treatment of hypertension consisting essentially of an antihypertensive effective amount of a compound of claim 1, in association with a pharmaceutical carrier or diluent.

4,263,299
HETEROCYCLIC COUMARIN DERIVATIVES

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst, both of England, assignors to Beecham Group Limited, England

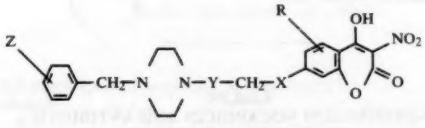
Filed Oct. 15, 1979, Ser. No. 85,038

Claims priority, application United Kingdom, Oct. 20, 1978, 41322/78; Jul. 4, 1979, 23354/79

Int. Cl.[3] C07D *405/02*

U.S. Cl. 424—250 24 Claims

1. A compound of the formula (I):



(I)

and pharmaceutically acceptable salts thereof, wherein R is hydrogen or an alkyl group containing up to 6 carbon atoms; X is a bond or oxygen; Y is —$(CH_2)_n$— where n is 0 or an integer from 1 to 5 wherein one carbon atom not bound to the nitrogen atom may be optionally substituted with a hydroxy group; and Z is hydrogen or halogen.

4,263,300
SUBSTITUTED 2-PHENYLAMINO-1,3-TETRAHYDRO-2-PYRIMIDINES AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria, and Ludwig Pichler, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

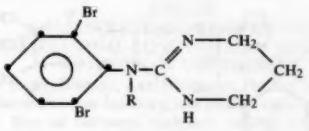
Filed Jul. 17, 1979, Ser. No. 58,164

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831600

Int. Cl.[3] A61K *31/505;* C07D *239/14*

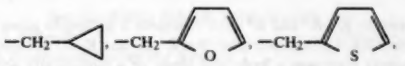
U.S. Cl. 424—251 3 Claims

1. A compound of the formula



(I)

wherein R is a radical selected from the group consisting of



—CH_2—CH=CH_2, —CH_2—CH=CH—CH_3, and —CH_2—C(CH_3)=CH_2,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

2. A bradycardiac pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective bradycardiac amount of a compound of claim 1.

4,263,301
β-PHENYL-β-HYDROXYETHYLAMINOALKYLTHEOPHYLLINES AS INHIBITORS OF BIOSYNTHESIS OF TRIGLYCERIDES

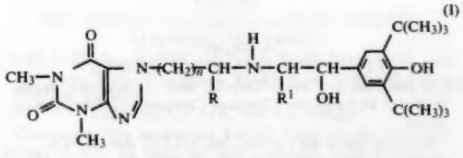
George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 24, 1980, Ser. No. 114,781

Int. Cl.[3] A61K *31/52*

U.S. Cl. 424—253 4 Claims

1. A method for inhibiting biosynthesis of triglycerides in swine which comprises administering, to a pig in need of said treatment, orally or parenterally, an effective amount of a compound of the formula:



(I)

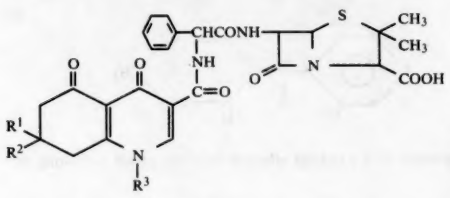
wherein n is one or two, and R and R^1 each independently is hydrogen or methyl, and their physiologically acceptable acid addition salts.

4,263,302
QUINOLINECARBOXYLIC ACID SUBSTITUTED PENICILLINS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Akira Matsubara, Yokohama; Hideaki Sakai, Fujisawa; Takuo Nakano, Yokohama, and Toshio Suganuma, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 96,183
Claims priority, application Japan, Nov. 28, 1978, 53/146054
Int. Cl.³ A61K *31/47;* **C07D** *499/70*
U.S. Cl. 424—258 **5 Claims**

5. An antibacterial composition comprising a pharmaceutically effective amount of a penicillanic acid of the general formula



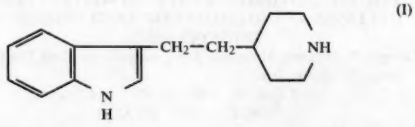
wherein R^1, R^2 and R^3 each represent a hydrogen atom or a lower alkyl group, provided that R^1, R^2 and R^3 do not simultaneously represent a hydrogen atom, or a biologically acceptable salt thereof as an active ingredient in a pharmaceutical carrier.

4,263,303
ANALGESIC COMPOSITION

Andre V. Uzan, Paris, France, assignor to Pharmindustrie, Gennevilliers, France

Filed Jul. 12, 1979, Ser. No. 56,753
Claims priority, application France, Jul. 13, 1978, 78 20969
Int. Cl.³ A61K *31/445, 31/485*
U.S. Cl. 424—260 **4 Claims**

1. An analgesic composition which comprises a compound of formula (I):



(I)

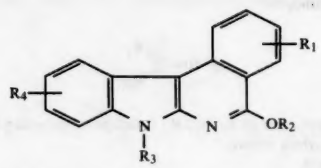
and morphine or pethidine wherein the proportion by weight of morphine or pethidine varies from 0.1 to 10 times the weight of the compound of formula (I).

4,263,304
7 H-INDOLO[2,3-C]ISOQUINOLINES

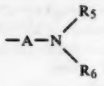
Kikuo Ishizumi, and Junki Katsube, both of Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 912,728, Jun. 5, 1978, abandoned. This application Feb. 27, 1979, Ser. No. 15,725
Int. Cl.³ A61K *31/475;* **C01D** *471/04*
U.S. Cl. 424—262 **5 Claims**

1. A compound of the formula



wherein R_1 and R_4 are each hydrogen, halogen, nitro or C_{1-4} alkoxy; R_2 and R_3 are each hydrogen, C_{1-4} alkyl, C_{2-4} alkenyl, C_{3-6}-cycloalkyl-C_{1-3}alkyl or a group of the formula



or —A—O—B wherein A is a straight or branched C_{1-7} alkylene; R_5 and R_6 are each hydrogen, or C_{1-4} alkyl; B is hydrogen, C_{1-4} alkyl, C_{2-4} alkenyl or C_{2-4} alkanoyl, provided that, when both R_1 and R_4 are hydrogen and R_3 is methyl, R_2 can not be hydrogen, and their pharmaceutically acceptable acid addition salts.

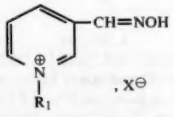
5. A composition useful for the treatment of transplantable tumors in warm-blood animals which comprises as an active ingredient a compound of claim **1** or its salt.

4,263,305
NOVEL PYRIDINIUMALDOXIMES HAVING MICELLAR CHARACTERISTICS

Joseph Epstein, Baltimore, Md., and Nicholas S. Bodor, Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Filed Mar. 12, 1979, Ser. No. 19,660
Int. Cl.³ A61K *31/15, 31/435;* **C07D** *213/76*
U.S. Cl. 424—263 **20 Claims**

1. A compound of the formula



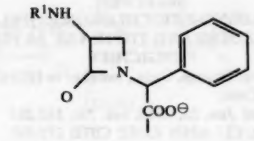
wherein R_1 is a radical of the type -(alkylene-O)$_n$-alkyl wherein n is a number from 0 to 4 inclusive and the alkylene and alkyl portions together contain from 6 to 25 carbon atoms, with the proviso that R_1 has a total of at least 7 atoms in its longest chain, and wherein $X^{\ominus}$ is an anion derived from a non-toxic inorganic or organic base.

4,263,306
3-N-PYRIDINIUM NOCARDICIN AND ANTIBIOTIC COMPOSITION THEREOF

John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

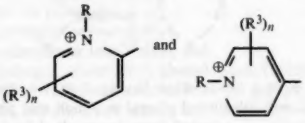
Filed Aug. 1, 1979, Ser. No. 62,608
Int. Cl.³ A61K *31/44, 31/445;* **C07D** *213/89, 213/79*
U.S. Cl. 424—263 **4 Claims**

1. A compound having the structural formula:



or a pharmaceutically acceptable salt or ester thereof wherein:

R' is selected from the group consisting of:



wherein:

wherein:

R is hydrogen alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms, alkenyl having 1–6 carbon atoms, phenyl, (mono- or di)-loweralkoxyphenyl, hydroxy, lower alkoxy, amino, (mono- or di)-loweralkyl amino, substituted and unsubstituted phenylaklkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;

R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and diloweralkylamino, loweralkoxyl, alkyl having from 1–6 carbon atoms, loweralkoxycarbonyl, methylsulfinyl, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxyl having 1–6 carbon atoms, phenyl and phenyloxy;

n is an integer selected from 0 to 3.

4. An antibitoic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim **1** and a pharmaceutical carrier therefor.

4,263,307

N-ARALKYL CONTAINING CYANOPYRIDINES

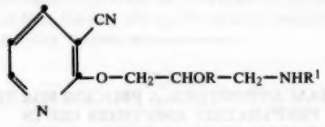
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 919,646, Jun. 27, 1978. This application Aug. 2, 1979, Ser. No. 63,019

Int. Cl.[3] **A61K** *31/44;* **C07D** *213/85*

U.S. Cl. 424—263 **9 Claims**

1. Compounds having the formula



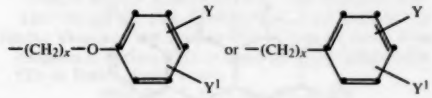
and pharmaceutically acceptable salts thereof

wherein

R is

wherein L is C_1–C_{10} alkyl, phenyl or substituted phenyl having one or two substituents independently selected from C_1–C_4 alkyl, C_1–C_4 alkoxy or halo

R^1 is a phenyllinearalkyl group having the formula



(a) (b)

wherein

X is 1 to 4 and

Y and Y^1 are H, —OCH_3, OH or halo.

4,263,308

N-ALKOXY-DITHIENYLPIPERIDINES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHODS OF USE THEREOF

Jurgen Engel, Alzenau; Axel Kleemann, Hanau; Ute-Achterrath Tuckermann, Neu-Isenburg, and Klaus Thiemer, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

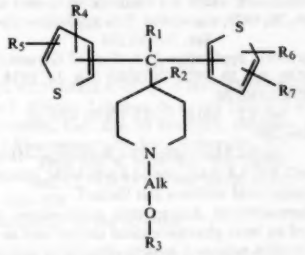
Filed Jan. 14, 1980, Ser. No. 112,100

Claims priority, application United Kingdom, Jan. 17, 1979, 1660/79

Int. Cl.[3] **C07D** *417/14;* **A61K** *31/445*

U.S. Cl. 424—267 **30 Claims**

1. A compound having the formula



where R_1 is hydrogen or hydroxy, R_2 is hydrogen or R_1 and R_2 together represent a second bond between the carbon atoms carrying R_1 and R_2, Alk is a C_2–C_6 alkylene group, R_3 is a C_3–C_8-cycloalkyl group, a C_1–C_6-alkyl group, a C_1–C_6-hydroxyalkyl group or a C_2–C_6-hydroxyalkoxy-C_1–C_6-alkyl group and the groups R_4, R_5, R_6 and R_7 are the same or different and are hydrogen, C_1–C_6-alkyl group or halogen atoms, an N-oxide thereof, a lower alkyl quarternary salt thereof or an acid addition salt thereof with a therapeutically acceptable acid.

18. A method of relieving bronchospasm in a mammal comprising administering to the mammal an effective amount of a compound of claim **1** to relieve the bronchospasm.

4,263,309

POLYCYCLIC TRIAZOLES USED TO INHIBIT ALLERGIC RESPONSES

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst, near Horsham, both of England, assignors to Beecham Group Limited, England

Filed Oct. 23, 1978, Ser. No. 953,464

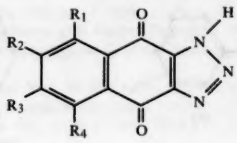
Claims priority, application United Kingdom, Jul. 22, 1977, 30766/77; Nov. 10, 1977, 46765/77; Nov. 10, 1977, 46767/77

Int. Cl.[3] **A61K** *31/41;* **C07D** *249/00*

U.S. Cl. 424—269 **5 Claims**

1. A method of inhibiting an antigen induced allergic re-

sponse which comprises prophylactically administering to a patient in need thereof an effective dose of a compound of the formula:



or a pharmaceutically acceptable salt thereof wherein R_1, R_2, R_3 and R_4 are the same or different group selected from the group consisting of hydrogen, halo, nitro, lower alkyl or lower alkoxy, or any adjacent two of R_1 to R_4 together are alkylene of 3 to 5 carbon atoms or 1,4-buta-1,3-dienylene.

3. 4,9-dihydro-6,7-dimethyl-4,9-dioxo-1H-naphtho[2,3-d]-triazole or a pharmaceutically acceptable salt thereof.

4,263,310

8-BROMO-6-(O-CHLORO-PHENYL)-4H-S-TRIAZOLO-[3,4,-c]-THIENO-[2,3-e]-1,4-DIAZEPINES AND SALTS THEREOF

Karl H. Weber, Gau-Algesheim; Adolf Bauer, Raubling; Peter Danneberg, Ockenheim, and Franz J. Kuhn, Bingen, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 855,753, Nov. 30, 1977, Pat. No. 4,199,588, which is a continuation of Ser. No. 672,281, Mar. 31, 1976, abandoned, which is a continuation-in-part of Ser. No. 554,309, Feb. 28, 1975, abandoned. This application Oct. 5, 1979, Ser. No. 82,114

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1974, 2410030; Jul. 20, 1974, 2435041; Sep. 24, 1974, 2445430; Dec. 21, 1974, 2460776

Int. Cl.[3] **A61K** *31/55;* **C07D** *495/12*

U.S. Cl. 424—269 **3 Claims**

1. 6-(o-Chloro-phenyl)-1,8-dibromo-4H-s-triazolo-[3,4c]thieno[2,3-e]-1,4-diazepine or a non-toxic, pharmacologically acceptable acid addition salt thereof.

2. A pharmacetucal dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective anxiolytic, tension-relieving, muscle-relaxing or anticonvulsive amount of a compound of claim 1.

4,263,311

5,6-PHENYL-2,3-DIHYDROIMIDAZO [2,1-b] THIAZOLES

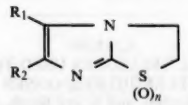
Paul E. Bender, Willingboro, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 727,184, Sep. 27, 1976, abandoned. This application Aug. 18, 1977, Ser. No. 825,612

Int. Cl.[3] **C07D** *277/60*

U.S. Cl. 424—270 **6 Claims**

1. A compound of the formula:



in which:

R_1 and R_2, being the same, are phenyl substituted by one lower alkylsulfinyl, 2,2,2-trifluoroethoxy or lower alkanoyloxy; and

n is 0, 1 or 2,

or a pharmaceutically acceptable acid addition salt thereof, said lower alkyl groups having 1–4 carbon atoms.

4,263,312

SELECTED 5-HYDRAZONO-3-TRICHLOROMETHYL-1,2,4-THIADIAZOLES AND THEIR USE AS FOLIAR FUNGICIDES

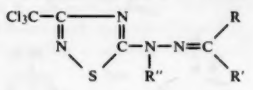
Lawrence E. Katz, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 23, 1980, Ser. No. 162,287

Int. Cl.[3] **A01N** *43/82;* **C07D** *285/08*

U.S. Cl. 424—270 **10 Claims**

1. A compound of the formula:



wherein R is a lower alkyl having 1 to 4 carbon atoms, phenyl, and substituted phenyl in which said phenyl ring substituents are selected from lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, halo, hydroxy, nitro and mixtures thereof; R′ and R″ are individually selected from hydrogen and lower alkyl having from 1 to 4 carbon atoms.

8. The method for controlling fungi which comprises contacting said fungi with a fungicidal amount of a compound of claim 1.

4,263,313

TOPICAL PHARMACEUTICAL FORMULATIONS, CARRIER COMPOSITIONS THEREFOR, AND PREPARATION THEREOF

Theodor Eckert; Fritz H. Kemper, both of Muenster; Martin Wischniewski, Neustadt a.Rbge., and Reinhard Hempel, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 22, 1978, Ser. No. 880,155

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1977, 2707878

Int. Cl.[3] **A61K** *31/40, 31/195, 31/415, 47/00*

U.S. Cl. 4245273 P **8 Claims**

1. In a topical pharmaceutical composition including a pharmacologically-effective amount of a pharmacologically-active agent distributed in a vehicle suitable for topical application to human and animal skin, wherein the pharmacologically-active agent comprises phenylbutazone, the improvement comprising said vehicle consisting essentially of an active-ingredient-absorption-enhancing amount of from about 20 to 100% by weight of a partial glyceride of a fatty acid of medium chain length selected from a monoglyceride or a diglyceride of a fatty acid containing from about 6 to about 12 carbon atoms or a mixture thereof, and from about 0 to 80% of one or more pharmaceutical adjuvants, whereby enhanced absorption of the active agent results upon application of the composition to the skin.

4,263,314

β-LACTAM ANTIBIOTICS, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Roger J. Ponsford, Horsham; Robert Southgate, Warnham, and Patricia M. Roberts, Horley, all of England, assignors to Beecham Group Limited, England

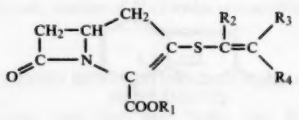
Filed Jan. 19, 1979, Ser. No. 4,891

Claims priority, application United Kingdom, Jan. 19, 1978, 2166/78

Int. Cl.[3] **A61K** *31/40;* **C07D** *487/04*

U.S. Cl. 424—274 **42 Claims**

1. A compound of the formula:



wherein

R_1 is hydrogen; a pharmaceutically acceptable cation; lower alkyl; lower alkyl substituted with lower alkoxy; benzyl; benzyl substituted with lower alkoxy, nitro or chloro; acetoxymethyl; pivaloyloxymethyl; α-ethoxycarbonyloxyethyl; or phthalidyl;

R_2 is hydrogen or lower alkyl;

R_3 is hydrogen or lower alkyl; and

R_4 is hydrogen; lower alkyl; phenyl; phenyl substituted with one or two members selected from the group consisting of fluoro, chloro, lower alkoxy and benzyloxy; carbo(lower-)alkoxy; or carbobenzyloxy.

4,263,315

AZATETRACYCLIC CARBONITRILES

Hans Blattner, Riehen, and Angelo Storni, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

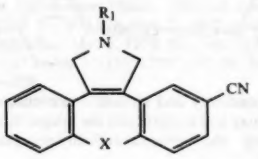
Filed Jul. 2, 1979, Ser. No. 54,318

Claims priority, application Switzerland, Jul. 7, 1978, 7420/78

Int. Cl.[3] **H61K** *31/55;* **C07D** *487/06, 491/06*

U.S. Cl. 424—274 **15 Claims**

1. An azatetracyclic carbonitrile of the formula I



(I)

wherein R_1 is hydrogen, lower alkyl having 1–7 carbon atoms, cycloalkyl-lower alkyl having 4–8 carbon atoms, lower alkenyl having 3–4 carbon atoms, hydroxy-lower alkyl having 2–8 carbon atoms and the hydroxy group is separated from the ring nitrogen atom by at least two carbon atoms, lower alkoxy-lower alkyl having 3–10 carbon atoms or alkanoyloxy-lower alkyl having 3–21 carbon atoms and in the lower alkoxy-lower alkyl and alkanoyloxylower alkyl radicals the oxygen atom is separated from the ring nitrogen by at least two carbon atoms, and X is epoxy, epithio, or

(Ia)

in which R_2 is hydrogen or lower alkyl having not more than 4 carbon atoms, or a pharmaceutically acceptable salt thereof.

8. A pharmaceutical composition useful in the treatment of states of agitation in a warm-blooded animal comprising a therapeutically effective amount of a compound according to claim 1 or a pharmaceutically acceptable acid addition salt thereof and a pharmaceutical carrier.

4,263,316

N-(1-METHYL-2-PYRROLIDINYLMETHYL)-2,3-DIMETHOXY-5-METHYLSULFAMOYL BENZAMIDE AND ITS DERIVATIVES, METHODS OF PREPARING THEM AND THEIR APPLICATION TO THE TREATMENT OF TROUBLES OF THE LOWER PART OF THE BODY

Michel Thominet, and Jacques Perrot, both of Paris, France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France, Paris, France

Filed Oct. 5, 1979, Ser. No. 82,421

Claims priority, application France, Oct. 11, 1978, 78 29004

Int. Cl.[3] **C07D** *207/09;* **A61K** *31/40*

U.S. Cl. 424—274 **4 Claims**

1. A composition for reducing the frequency of urination in subjects suffering from excessive frequency of urination comprising an effective amount of N-(1-methyl-2-pyrrolidinylmethyl)-2,3-dimethoxy-5-methylsulphamoyl benzamide, its N-oxide, its pharmacologically acceptable acid addition salts, its quaternary ammonium salts and levorotatory and dextrorotatory isomers thereof and a pharmaceutically acceptable carrier.

3. A composition for reducing pelvic spasms in subject suffering from same comprising an effective amount of a compound of N-(1-methyl-2-pyrrolidinylmethyl)-2,3-dimethoxy-5-methylsulphamoyl benzamide, its N-oxide, its pharmacologically acceptable acid addition salts, its quaternary ammonium salts and levorotatory and dextrorotatory isomers thereof and a pharmaceutically acceptable carrier.

4,263,317

SPIRO[CYCLOHEXANE-1,1'(3'H)-ISOBENZOFURAN]S

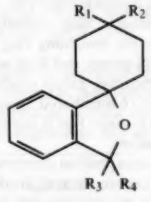
Lawrence L. Martin, Lebanon, N.J., and Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Filed Sep. 6, 1979, Ser. No. 73,055

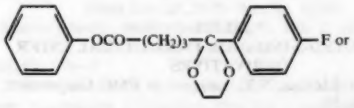
Int. Cl.[3] **C07D** *307/94;* **A61K** *31/34*

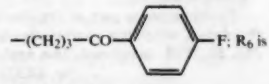
U.S. Cl. 424—278 **80 Claims**

1. A compound of the formula

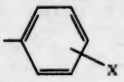


wherein R_1 is hydrogen; R_2 is NR_5R_6 wherein R_5 is hydrogen, loweralkyl R—OCO— wherein R is loweralkyl,

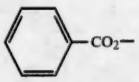




hydrogen or loweralkyl; R_3 is hydrogen, loweralkyl or cycloalkyl having 3 to 7 carbon atoms, inclusive



wherein X is hydrogen, hálogen or loweralkyl; R_4 is hydrogen, loweralkyl or hydroxy, R_3 and R_4 taken together with the carbon atom to which they are attached form a carbonyl group; the geometrical isomers and optical antipodes thereof and the pharmaceutically acceptable acid addition salts thereof when R_5 is not the



group.

49. An analgesic pharmaceutical composition which comprises an analgesically effective amount of a compound defined in claim **1** and a pharmaceutically acceptable carrier thereof.

4,263,318

N-ALKOXY- AND N-ARYLOXYSULFINYLCARBAMATE ESTERS

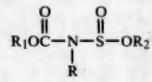
Mohamed A. H. Fahmy, and Tetsuo R. Fukuto, both of Riverside, Calif., assignors to The Reagents of the University of California, Los Angeles, Calif.

Filed Mar. 7, 1979, Ser. No. 18,598

Int. Cl.[3] **A01N** *43/16;* **C07D** *317/44, 307/82*

U.S. Cl. 424—282 **40 Claims**

1. Carbamates having pesticidal activity of the formula:



wherein R is a hydrocarbyl group containing from 1 to 12 carbon atoms; R_1 is selected from the class consisting of a hydrocarbyl group containing from 1 to 20 carbon atoms, a 5 to 6 membered heterocyclic ring consisting essentially of one to two O or S atoms, the remaining ring atoms being carbon atoms, and the >C=N-group; and R_2 is selected from the class consisting of a hydrocarbyl group containing from 1 to 20 carbon atoms and a 5 to 6 membered heterocyclic ring consisting essentially of one to two O or S atoms, the remaining ring atoms being carbon atoms.

33. An insecticidal composition comprising an insecticidally effective amount of a carbamate as defined in claim **1**, in admixture with a carrier.

37. The method of controlling insects which comprises applying to the sites of infestation an insecticidally effective amount of a compound as defined in claim **1**.

4,263,319

4-SUBSTITUTED-2-INDANOL INSECTICIDAL ESTER DERIVATIVES

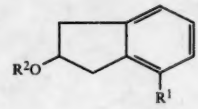
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 927,198, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 870,973, Jan. 20, 1978, abandoned. This application May 24, 1979, Ser. No. 42,372

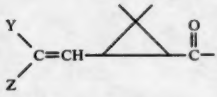
Int. Cl.[3] **A01N** *53/00;* **C07C** *61/04, 61/13*

U.S. Cl. 424—305 **10 Claims**

1. A compound of the formula



in which R^1 is phenyl which may be substituted with or lower alkyl, and R^2 is 2,2,3,3-tetramethylcyclopropylcarbonyl, 1-(4-chlorophenyl)-2-methylpropylcarbonyl, or a group of the formula



wherein Y and Z, the same or different, are hydrogen, halogen, lower alkyl, perhalo(lower)alkyl, phenyl which may be substituted with halogen or lower alkyl, or phenylthio which may be substituted with halogen or lower alkyl, with the proviso that one of Y and Z is other than hydrogen or methyl.

4,263,320

HYPOGLYCEMIC PHENYLPROPYNYLAMINO BENZOIC ACIDS

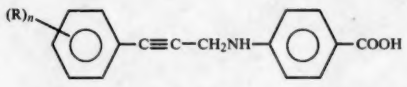
Donald P. Matthews, Indianapolis; Eugene R. Wagner, Carmel, and Roger D. McDermott, Noblesville, all of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 4, 1979, Ser. No. 44,877

Int. Cl.[3] **C07A** *101/52;* **A01N** *37/12*

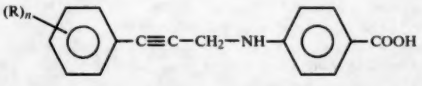
U.S. Cl. 424—319 **19 Claims**

1. A compound having the formula



wherein R independently and at each occurrence represents halo, alkyl or alkoxy and n represents the integer 0, 1, or 2 and further including the pharmaceutically-acceptable salts thereof.

7. A method for treating hyperglycemia in a mammal which comprises administering internally to the mammal an effective hypoglycemic amount of a compound or pharmaceutically-acceptable salt thereof having the formula



wherein R independently and at each occurrence represents halo, alkyl or alkoxy and n represents the integer 0, 1, or 2.

4,263,321

ALKANOL AMIDE TOXICANTS

Myron J. Lover, Mountainside; Arnold J. Singer, South Orange; Donald M. Lynch, Waldwick, and William E. Rhodes, III, Cranford, all of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed May 31, 1977, Ser. No. 802,015

Int. Cl.[3] **A01N** *37/18;* **A61K** *31/16*

U.S. Cl. 424—320 **1 Claim**

1. A method of controlling ectoparasites which comprises

applying to a human or animal in need of such control, an effective toxic amount of N-(2-hydroxypropyl)lauramide.

4,263,322
HYDROXY BENZOHYDROXAMIC ACIDS AND BENZAMIDES

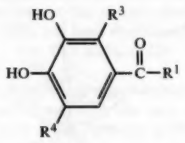
Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222; Howard L. Elford, 3313 Gloucester Rd., Richmond, Va. 23227, and Galen L. Wampler, 6938 Chamberlayne Rd., Mechanicsville, Va. 23111

Filed Mar. 1, 1979, Ser. No. 16,472

Int. Cl.³ C07C *103/26, 131/11;* **A61K** *31/165*

U.S. Cl. 424—324 **3 Claims**

1. A method of inhibiting ribonucleotide reductase which comprises administering to a mammal carrying a tumor having a relatively high ribonucleotide reductase level, an amount of a compound according to the following formula effective to inhibit ribonucleotide reductase



wherein R^3 and R^4 are H or OH and R^1 is NH_2 or NHOH such that, when R^1 is NH_2, R^3 is H and R^4 OH and when R^1 is NHOH, R^3 is OH and R^4 is H.

4,263,323
β-RECEPTOR BLOCKING COMPOUNDS AND TREATMENT OF CARDIOVASCULAR DISORDERS THEREWITH

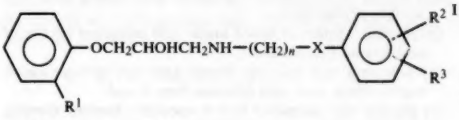
Enar I. Carlsson, Västra Frölunda; Gustav B. R. Samuelsson, Mölnlycke, and Bo T. Lundgren, Frillesås, all of Sweden, assignors to Aktiebolaget Hässle, Mölndal, Sweden

Division of Ser. No. 839,636, Oct. 5, 1977, abandoned. This application Apr. 5, 1979, Ser. No. 27,279

Int. Cl.³ A61K *31/165;* **C07C** *103/26, 103/28*

U.S. Cl. 424—324 **6 Claims**

1. A compound of the formula I



wherein R^1 is $CH_3OC_2H_4NHCOCH_2$—O—, R^2 and R^3 are hydrogen, methoxy, hydroxy or hydroxymethoxy, provided that R^2 and R^3 are not both hydrogen, X is —O— or —S— and n is an integer from 2 to 4, or a therapeutically acceptable salt of such a compound.

4,263,324
ANTICOCCIDIAL AND OVOLARVICIDAL COMPOSITIONS

Alfred Meyer, Basel, and Clemens Kocher, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

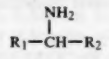
Continuation of Ser. No. 843,927, Oct. 20, 1977, abandoned. This application Aug. 27, 1979, Ser. No. 70,217

Claims priority, application Switzerland, Oct. 27, 1976, 13541/76

Int. Cl.³ A61K *31/13*

U.S. Cl. 424—325 **6 Claims**

1. A method for controlling coccidial diseases in animals which comprises treating oocyst-bearing material excreted by the animal with a compound of the formula:



wherein R_1 represents alkyl of 4 to 24 carbon atoms and R_2 represents hydrogen or alkyl of 1 to 12 carbon atoms, in an effective amount sufficient to kill the oocysts.

4,263,325
β-RECEPTOR BLOCKING COMPOUNDS AND TREATMENT OF CARDIOVASCULAR DISORDERS THEREWITH

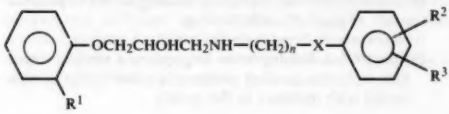
Enar I. Carlsson, Västra Frölunda; Gustav B. R. Samuelsson, Mölnlycke, and Bo T. Lundgren, Frillesas, all of Sweden, assignors to Aktiebolaget Hässle, Mölndal, Sweden

Division of Ser. No. 839,636, Oct. 5, 1977, abandoned. This application Apr. 5, 1979, Ser. No. 27,280

Int. Cl.³ A61K *31/135;* **C07C** *93/00, 93/26*

U.S. Cl. 424—330 **6 Claims**

1. A compound of the formula I



wherein R^1 is hydroxymethyl, R^2 and R^3 are hydrogen, methoxy, hydroxy or hydroxymethyl, provided that R^2 and R^3 are not both hydrogen, X is —O— and n is an integer from 2 to 4, or a therapeutically acceptable salt of such a compound.

4,263,326
ANTIMICROBIAL COMPOSITIONS CONTAINING AN OCTYLPHENONE

Yukichi Kimura, Narashino; Takeshi Kanamori, Chiba, and Tomonori Sakamoto, Kamagaya, all of Japan, assignors to The Lion Dentrifice Co. Ltd., Tokyo, Japan

Filed Oct. 31, 1979, Ser. No. 90,043

Claims priority, application Japan, Nov. 17, 1978, 53-141927

Int. Cl.³ A01N *35/00*

U.S. Cl. 424—331 **4 Claims**

1. An antimicrobial agent for preventing growth of microorganisms in foodstuffs, cosmetics, and medicines, which comprises a microbicidal effective amount of 2',6'-dihydroxy-9-(2,5-dihydroxyphenyl)octylphenone and an inert carrier.

4,263,327
PROCESS FOR THE PRODUCTION OF SUGARLESS CHEWING GUM

Arne M. Pedersen, Vanløse, and Henning Sonder, Tastrup, both of Denmark, assignors to Chr. F. Petri's Eftf. I/S, Vanløse, Denmark

Filed Jan. 29, 1979, Ser. No. 6,984

Claims priority, application Denmark, Feb. 3, 1978, 496/78

Int. Cl.³ A23G *3/30*

U.S. Cl. 426—3 **6 Claims**

1. In a process for the production of a sugarless chewing gum composition comprising admixing a chewing gum base and sorbitol as a sweetner; the improvement which comprises initially admixing sorbitol syrup with a gluconic acid or a water-soluble salt thereof, the latter being present in an amount sufficient to control crystallization of sorbitol, evaporating the resulting admixture to a sorbitol concentration of at least 90% and then combining the concentrated admixture with a gum base to form a chewing gum composition.

4,263,328

TABLETED GASIFIED CANDY

Maya Parada, Brooklyn, N.Y., and Marvin J. Rudolph, Bethel, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,481
Int. Cl.[3] A23G *3/00*
U.S. Cl. 426—103 **10 Claims**

1. A method of preparing a tableted confection of gasified candy which comprises:

(a) preparing a melt of sugar,

(b) gasifying the melt under superatmospheric pressure,

(c) solidifying the gasified melt under pressure trapping bubbles of gas within the solid sugar,

(d) sub-dividing the solid gasified sugar into finely divided particles,

(e) admixing 5–35% of hard finely divided particles of gasified candy containing 2–7 cm^3 of gas per gram of candy and having a moisture content of between 1.0 and 5% with 64–95% of an excipient binder for the gasified candy said binder comprising carbohydrate material selected from the group consisting of sugars and starches and having a moisture content up to 2% water and

(f) directly compressing the admixture of step (e) into a tablet under 1800–2500 psig, said quantity of binders being sufficient to provide substantial binding action to produce a tablet of gasified candy having

(i) resistance to breaking and crumbling, and

(ii) controlled disintegration to produce a sizzling sensation from the gasified candy when said tablet is contacted with moisture in the mouth.

4,263,329

METHOD FOR IMPROVING TASTE AND STABILITY OF SAUSAGE

Dennis G. Olson, Lincoln, Nebr., and Hugo E. Wistreich, Chicago, Ill., assignors to B. Heller & Company, Chicago, Ill.

Filed Jun. 15, 1977, Ser. No. 806,955
Int. Cl.[3] A23B *4/12*
U.S. Cl. 426—310 **7 Claims**

1. In the preparation of a sausage, the improvement in the stability and taste of the sausage wherein the cooked or smoked and cooked sausage is immersed in an aqueous medium having a total acidity up to 20% by weight, wherein lactic acid makes up at least 25% of the acidity with edible organic acids making up the remainder for a time to provide for complete penetration of the sausage.

4,263,330

METHOD FOR DRAINING WHEY FOR MAKING LARGE SIZED BLOCKS OF CHEESE

Robert R. Streeter; Vincent J. Whitehorn, both of Pollock, S. Dak., and Earl C. Nicholas, Carthage, Mo., assignors to L. D. Schreiber Cheese Co., Inc., Green Bay, Wis.

Filed Jul. 9, 1979, Ser. No. 56,088
Int. Cl.[3] A01J *25/11, 25/13, 25/15*
U.S. Cl. 426—414 **8 Claims**

1. A method for draining whey from cheese curd particles for manufacturing large sized blocks of cheese comprising the steps of:

(a) providing an open ended pressing container mold lined with a flexible plastic material;

(b) enclosing the bottom open end of said container with a drain plate defining a plurality of apertures;

(c) positioning an internal drain screen means comprising two plates having a multiplicity of openings for the whey to pass through and being substantially parallel and spaced apart by dimples defined in said plates centrally onto said drain plate and over and in fluid communication with apertures in the drain plate; said internal drain screen means extending substantially the height of the container mold;

(d) filling said container with said cheese curd particles containing whey;

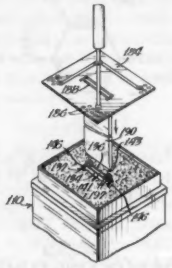
(e) permitting said cheese curd particles to settle and a quantity of whey to drain due to the weight of said cheese curd;

(f) applying a first pressure to said cheese curd particles by inserting a spreading spade with a press plate into said container wherein said spreading spade inserted between said parallel plates moves apart said internal drain screen means and thereby exerts a horizontal force on said curd particles and at the same time said press plate exerts a vertical force on said curd particles thus causing additional whey to drain;

(g) removing said press plate and said spreading spade from said container;

(h) pressing said curd particles for a second time with a perforated follower plate;

(i) removing said follower plate from said container exposing a surface of cheese curd particles;



(j) covering the now exposed cheese curd particles with a flexible plastic sheet said sheet overlapping with said flexible plastic liner;

(k) inserting a bottom lid over said flexible plastic sheet;

(l) placing a leg bracket over said bottom lid;

(m) inverting said container;

(n) removing said drain plate from said inverted container to expose a second surface of cheese curd;

(o) covering the second surface of exposed cheese curd with a second flexible sheet said sheet overlapping with said flexible plastic liner;

(p) placing a follower board inside said container on top of said second flexible sheet;

(q) strapping said follower board with coil springs which exert a force onto said follower board; and

(r) placing said container into a vacuum chamber thereby removing air bubbles trapped in said flexible plastic liner to form a skin tight sealed package and further compressing said curd.

4,263,331

FLAVORING WITH MIXTURE OF 2,5-DIMETHYL-3-ACETYL-FURAN AND 3,5-DI-(2-METHYLPROPYL)-1,2,4-TRITHIOLANE

Chi-Kuen Shu, Matawan; Braja D. Mookherjee, Holmdel, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 963,176, Nov. 24, 1978. This application Sep. 13, 1979, Ser. No. 75,072
Int. Cl.[3] A23L *1/226*
U.S. Cl. 426—535 **1 Claim**

1. A process for augmenting or enhancing the hazelnut flavor of a hazelnut flavored foodstuff comprising the step of adding to a hazelnut flavored foodstuff from about 0.0005 ppm up to about 250 ppm of a composition of matter consisting essentially of 2,5-dimethyl-3-acetylfuran and 3,5-di-(2-methyl-

propyl)-1,2,4-trithiolane, the ratio of said 2,5-dimethyl-3-acetylfuran: 3,5-di-(2-methylpropyl)-1,2,4-trithiolane being from 1:1 to 1:0.1.

4,263,332

USE OF 2(2'-METHYLTHIOPROPYL)-4,5-DIMETHYL-Δ^3-THIAZOLINE TO AUGMENT OR ENHANCE THE AROMA OR TASTE OF MASHED POTATO FLAVOR OR MASHED POTATO FLAVORED FOODSTUFFS

Donald A. Withycombe, Lincroft; Braja D. Mookherjee, Holmdel; Cynthia J. Mussinan, Bricktown; Manfred H. Vock, Locust, and Christopher Giacino, Califon, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 17,579, Mar. 5, 1979, which is a continuation-in-part of Ser. No. 730,156, Oct. 7, 1976, abandoned. This application Dec. 21, 1979, Ser. No. 105,887

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.[3] **A23L** *1/226*

U.S. Cl. 426—535 **2 Claims**

1. A method for augmenting or enhancing the aroma or taste of mashed potatoes comprising the step of adding to said mashed potatoes from 0.005 parts per million up to about 50 parts per million based on the total weight of said mashed potatoes of 2(2'-methylthiopropyl)-4,5-dimethyl-Δ^3-thiazoline.

4,263,333

CURCUMIN-METAL COLOR COMPLEXES

Il Y. Maing, New City, and Irene Miller, New York, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 12, 1979, Ser. No. 74,620

Int. Cl.[3] **A23L** *1/27*

U.S. Cl. 426—540 **12 Claims**

1. A water-soluble curcumin-metal complex comprising a metal ion component selected from the group consisting of stannous ion, zinc ion and mixtures thereof and a curcumin-component yielding an improved color composition having a curcumin to metal molar ratio of four to five moles of curcumin to each mole of metal ion and having longer lasting stability and the ability to provide many different hues in relation to the metal concentration.

4,263,334

WATER DISPERSIBLE CELLULOSIC POWDER AND METHOD OF MAKING THE SAME

Emanuel J. McGinley, Morrisville, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 911,658, May 31, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,672

Int. Cl.[3] **A23L** *1/04*

U.S. Cl. 426—573 **4 Claims**

1. The method of making a water-dispersible powder capable of functioning as a stabilizing agent and enhancing the body and texture of frozen dairy type foods, comprising intimately admixing in a wet state disintegrated beta-1,4 glucan with a carbohydrate sweetener and a hydrocolloid gum selected from guar gum, locust bean gum, gum arabic, sodium alignate, propylene glycol alginate, carrageenan, gum karaya and xanthan, and drying the mixture to form a powder constituted by weight from about 30% to about 80% beta-1,4 glucan, from about 10% to about 65% carbohydrate sweetener and from about 5% to about 20% hydrocolloid gum.

4,263,335

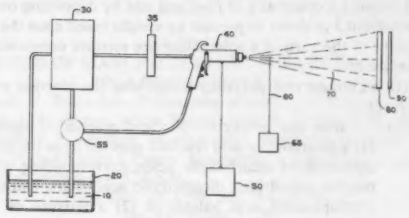
AIRLESS SPRAY METHOD FOR DEPOSITING ELECTROCONDUCTIVE TIN OXIDE COATINGS

William E. Wagner, Verona, and James A. Davis, Apollo, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 928,112, Jul. 26, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 78,999

Int. Cl.[3] **C03C** *17/25;* **B05D** *1/04, 5/12;* **G02B** *1/10*

U.S. Cl. 427—29 **10 Claims**



1. In a method for forming a film on a nonmetallic substrate by thermal decomposition of a metal-containing coating reactant, a solution of which is sprayed onto a primary surface at a temperature sufficient to thermally decompose the coating reactant, the improvement which comprises:

spraying the coating solution in the absence of atomizing air using hydraulic pressure to form a spray.

4,263,336

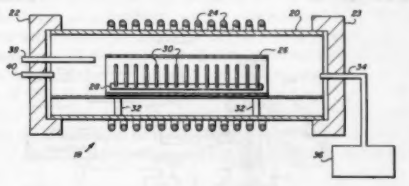
REDUCED PRESSURE INDUCTION HEATED REACTOR AND METHOD

Stephen W. Thompson, Scottsdale; Harry G. Smith, Phoenix, and Richard S. Rosler, Paradise Valley, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1979, Ser. No. 98,098

Int. Cl.[3] **C23C** *11/06*

U.S. Cl. 427—45.1 **16 Claims**



1. A reduced pressure induction heated reactor for depositing material on workpieces in the reactor which comprises: first means defining a reaction volume, said first means surrounded by an induction coil capable of being energized by an RF energy source and said first means having an opening therein; second hollow means positioned within said first means for receiving the workpieces; third means positioned to seal said opening in said first means; shorting means electrically connecting said second means and said third means, said second means, third means and shorting means insulatively supported and electrically isolated from direct contact to external electrical potential.

4,263,337
SIZING TEXTILE WITH IN SITU GRAFT POLYESTER

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 937,690, Aug. 28, 1978, abandoned. This application Jul. 25, 1979, Ser. No. 60,830

Int. Cl.[3] **B05D** *3/02*

U.S. Cl. 427—54.1 **12 Claims**

1. A method of sizing a fibrous synthetic organic yarn to facilitate its construction into a fabric comprising the steps of (a) forming a composite of fiber and size by depositing on the yarn about 3 to about 10 percent by weight based upon the dry weight of the yarn of a solventless size mixture comprising a mixture of

(I). an unsaturated polyester comprising the reaction product of:

(a) at least one polycarboxylic acid reactant comprising (1) a dicarboxylic acid reactant selected from the group consisting of dicarboxylic acids, corresponding dicarboxylic anhydrides, dicarboxylic acid esters, and their corresponding acyl halides or (2) a mixture of said dicarboxylic acid reactant with up to 20 mole percent of a polycarboxylic acid reactant having a functionality greater than two based upon 100 mole percent of said dicarboxylic acid reactant and

(b) at least one polyhydric alcohol reactant comprising (1) a diol or (2) a mixture of a diol and up to 20 mole percent of a polyhydric alcohol having a functionality greater than two based upon 100 mole percent of said polyhydric alcohol, wherein a minor effective proportion of said dicarboxylic acid reactant or polyhydric alcohol reactant is alpha, beta-ethylenically unsaturated and

(II). at least one monovinyl monomer reactant comprising at least one monovinyl monomer having at least one carboxylic group or a mixture of said vinyl monomer with any monofunctional vinyl monomer and (b) heating, irradiating, or both heating and irradiating said mixture in the presence of an initiator.

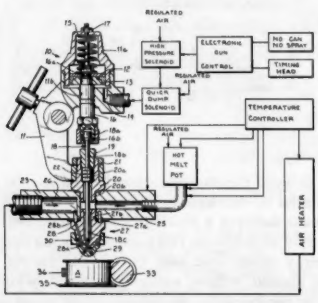
4,263,338
HOT SPRAY

Kenneth R. Rentmeester, Barrington; Eugene F. Eike, Crystal Lake; Gerald G. Echternach, Barrington, and Leo A. Stukas, Wheaton, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jul. 11, 1979, Ser. No. 56,701

Int. Cl.[3] **B05D** *1/02, 3/02, 7/14, 7/22*

U.S. Cl. 427—55 **2 Claims**



2. A process for application of meltable solids to a heat conductive surface to be coated with a continuous and uniform layer including the steps of:

(a) melting the solids in a vessel having an inlet and an outlet,

(b) applying pressure to said inlet to force the melt through said outlet to a heated block containing a valve means,

(c) operating said valve means in accordance with the position of the surface to be coated,

(d) mixing hot gas with melt to atomize same,

(e) propelling said mixture through orifices to disperse and direct same in a fine spray toward the surface to be coated which is at a temperature below the melting temperature of the solids to quickly solidify and cause adherence of the mixture, and

(f) reheating said coated surface to reflow the melt and produce a uniform continuous coating.

4,263,339
PROCESS FOR THE PRODUCTION OF ELECTROLUMINESCENT POWDERS FOR DISPLAY PANELS

Albert G. Fischer, Dortmund, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Division of Ser. No. 906,887, May 17, 1978, Pat. No. 4,181,753, which is a continuation-in-part of Ser. No. 715,715, Aug. 19, 1976, Pat. No. 4,143,297. This application Jun. 25, 1979, Ser. No. 51,598

Int. Cl.[3] **B05D** *5/06;* **C09K** *11/30, 11/50*

U.S. Cl. 427—64 **8 Claims**

1. In a process for producing electroluminescent powder for display devices having a monoparticle layer of electroluminescent powder embedded in a high dielectric constant resin between two electrodes, the steps of doping zinc sulfide powder with at least one halogen compound of a cation selected from a class consisting of aluminum, copper and magnesium, said halogen compound being dissolved in an organic solvent, heating the doped powder initially in an atmosphere of essentially stagnating hydrogen sulfide at a temperature of about 800° to 1050° C. to effect grain growth and then in a moving hydrogen sulfide gas stream to drive off halogen vapors, thereafter heating the powder to about 350° C. to 550° C. in molten sulfur and adding thereto a small amount of sulfide selected from the class consisting of copper, arsenic and antimony, dissolving the sulfur out of the powder and coating the particles of said powder with an impermeable passivating inorganic surface coating of zinc phosphate or glass.

4. In a process for producing electroluminescent powder for display devices having a monoparticle layer of electroluminescent powder embedded in a high dielectric constant resin between two electrodes, the steps of doping zinc sulfide-zinc selenide powder with at least one halogen compound of a cation selected from the class consisting of aluminum, copper and magnesium, said halogen compound being dissolved in an organic solvent, heating the doped powder initially in an atmosphere of essentially stagnating hydrogen sulfide at a temperature of about 800° to 1050° C. to effect grain growth and then in a moving hydrogen sulfide gas stream to drive off halogen vapors, thereafter heating the powder to about 350° C. to 550° C. in a molten sulfur-selenium mixture of the same molar composition as the powder and adding thereto a small amount of sulfide selected from the class consisting of copper, arsenic and antimony, dissolving the sulfur-selenium mixture out of the powder and coating the particles of said powder with an impermeable, passivating inorganic surface coating of zinc phosphate or glass.

4,263,340
PROCESS FOR PRODUCING AN INTEGRATED CIRCUIT

Gerard Nuzillat, and Christian Arnodo, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 6, 1979, Ser. No. 17,955

Claims priority, application France, Mar. 8, 1978, 78 06673

Int. Cl.[3] **H01L** *29/48*

U.S. Cl. 427—84 **3 Claims**

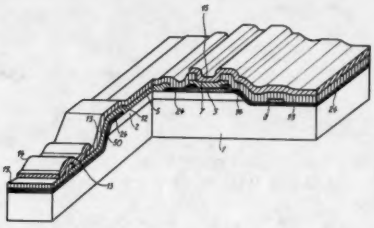
1. A process for producing an integrated circuit on a semi-

insulating substrate formed by a monocrystalline compound of the groups III and V of the Mendeleev classification, comprising the preliminary steps of forming an n-type layer of the same compound, and treating said layer so as to localize at least one active zone said process comprising the following steps:

(A) depositing an ohmic contact in the active zone;

(B) depositing a first thin dielectric layer and opening windows in said first layer by a "lift-off" process so that the active zone is bared at the locations of zones where Schottky contacts are to be formed and so that said ohmic contact is bared;

(C) depositing in said windows and on the rest of the first



dielectric layer a first metalization layer of connections providing a Schottky contact with the bared portion of said active layer and a connection with said ohmic contact;

(D) depositing on the assembly a second dielectric layer which is thicker than said first layer and opening by a "lift-off" process of windows in said second layer at places baring the first metalization layer;

(E) depositing a second metalization layer of connections on said second dielectric layer and in its windows allowing connection through said second metalization layer to said Schottky contact at a point isolated from said active zone by said dielectric layers.

4,263,341

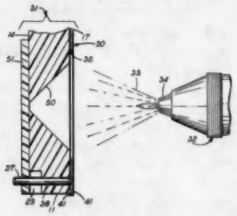
PROCESSES OF MAKING TWO-SIDED PRINTED CIRCUIT BOARDS, WITH THROUGH-HOLE CONNECTIONS

Gerald J. Martyniak, Indianapolis, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 19, 1978, Ser. No. 970,946

Int. Cl.³ B05D 5/12

U.S. Cl. 427—97 **10 Claims**



1. An improved process of making a printed circuit board, of the type wherein a conductive material is sprayed through a stencil to form a printed circuit pattern on a surface of an insulating substrate, wherein the improvement comprises:

forming at least one frustoconical hole through the substrate;

blocking the narrow end of the hole with a removable stop member;

then spraying a first circuit pattern on a first surface of the substrate, the first surface being that containing the wide end of the hole, so that a portion of the pattern coats the walls of the hole and forms a strip of the material across the narrow end of the hole against the stop member;

next, removing the stop member; and then

spraying a second circuit pattern on the opposite side of the substrate so that a portion of the second pattern overlaps and makes electrical contact with the strip of material formed across the narrow end of the hole in the prior spraying step, whereby a conductive through-hole connection is made between the first circuit pattern and the second pattern via the tapered hole.

4,263,342

METHOD OF MANUFACTURING MERCURY CONTACT ON A BERYLLIUM BASE

Anatoly V. Zakurdaev, Proletarsky prospekt, 79, kv. 66; Vladimir I. Vyzhimov, ulitsa Vostrukhina, 6, korpus 2, kv. 48; Vladimir P. Gladkov, Moskvorechie, Studgorodok MIFI, 7, kv. 35, and Valery I. Petrov, Simonovsky val, 20, korpus 2, kv. 29, all of Moscow, U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,748

Int. Cl.³ B05D 5/12

U.S. Cl. 427—123 **4 Claims**

1. A method of manufacturing a mercury contact on a beryllium base, comprising immersing said beryllium base into a body of chemically pure liquid mercury covered by a mixture of a solution of chromic anhydride and a solution of hydrofluoric acid.

4,263,343

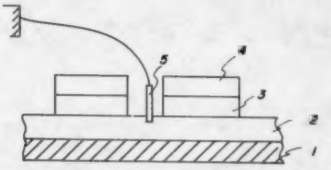
REFERENCE ELEMENTS FOR ION-SELECTIVE MEMBRANE ELECTRODES

Sang H. Kim, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,124

Int. Cl.³ B05D 5/12; G01N 27/26

U.S. Cl. 427—125 **6 Claims**



1. A process of preparing a metal/silver halide reference element comprising coating portions of a metal support, or a metal layer on a support, with a composition comprising a metal salt electrolyte having a cation which is selected from ammonium, alkali metals and alkaline earth metals and an anion which is a halogen or sulfur, a hydrophilic binder and a member of the group consisting of an oxidizing agent and a silver halide emulsion, with the proviso that if the oxidizing agent is used, the metal layer or metal support is silver and at least one of the metal salt electrolyte and oxidizing agent contains halide ions.

4,263,344

PAPER COATING METHODS

Bronislaw Radvan, Flackwell Heath, and David J. Dobson, Wokingham, both of England, assignors to Wiggins Teape Limited, London, England

Continuation of Ser. No. 604,935, Aug. 15, 1975, abandoned. This application Apr. 11, 1977, Ser. No. 786,382

Claims priority, application United Kingdom, Aug. 23, 1974, 37124/74

Int. Cl.³ B41M 5/22, 5/16

U.S. Cl. 427—150 **19 Claims**

10. In the method of coating paper material with particulate

solids deposited from a coating composition comprising particulate solid material suspended in an aqueous system containing binder, which comprises the steps of

(a) forming the coating composition so that it exhibits a desired viscosity which allows a substantially uniform, smooth coatweight of said particulate solids to be obtained on a surface of the paper material;

(b) applying said coating composition in excess to a surface of the paper material;

(c) removing the excess of such coating composition from said surface of the paper material to provide said desired coatweight; and then

(d) drying the coated paper material to provide the coated paper product; the improvement which comprises:

incorporating a minor amount of foaming agent in the coating composition, foaming the composition, and carefully controlling the air content of the foam such that the viscosity of the coating composition is greater in its unfoamed state than in the foamed state as applied in step (b), thus (i) permitting greater control and reproducibility of the coating process than is achievable with a similar composition which is unfoamed, and (ii) minimizing the drying load of step (d) by reducing the water content of the coating composition of step (a) relative to that which would otherwise provide said desired viscosity.

4,263,345

COATING COMPOSITION FOR FORMING RETROREFLECTIVE TREATMENTS ON FABRICS

Wallace K. Bingham, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 16, 1979, Ser. No. 94,696
Int. Cl.³ G02B *5/12*
U.S. Cl. 427—163 **7 Claims**

1. Coating composition useful for retroreflectorizing fabrics comprising (a) a dilute coating vehicle that includes film-forming binder material and at least 40 volume-percent of a volatile constituent, and (b) transparent microspheres having a refractive index between about 1.85 and 2 hemispherically coated with specular reflective means and dispersed in the coating vehicle in an amount accounting for about one-third or less of the volume of the nonvolatile portion of the composition.

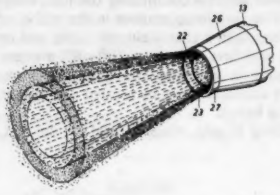
4,263,346

METHOD FOR THE MANUFACTURING OF FIBRE REINFORCED BUILDING STRUCTURES SURFACE COATINGS

Bertil Sandell, Länsmansvägen 21, 430 80 Hovas, Sweden

Filed Oct. 17, 1978, Ser. No. 952,146
Claims priority, application Sweden, Oct. 17, 1977, 7711626
Int. Cl.³ B05B *1/06;* B05D *1/12*
U.S. Cl. 427—196 **7 Claims**

1. A method of spraying a reinforced cementitious building material onto a surface from a spraying nozzle comprising creating a first central stream in the nozzle of reinforcing fillaments, creating a second stream in the nozzle of cementitious building material, said second stream substantially entirely surrounding said first stream and said first and second streams being substantially coaxial and being paralleled as the streams leave the nozzle, maintaining the integrity of said streams within the nozzle and releasing said streams from the nozzle with said second stream being discharged through an annular orifice co-axially surrounding the discharge opening of said first stream so as to continue maintaining the integrity of



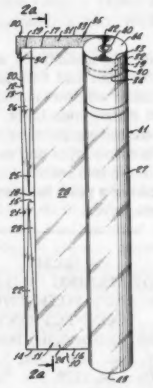
streams for a substantial part of their travel towards said surface.

4,263,347

APPARATUS AND METHOD FOR MASKING SURFACES

Maynard A. Banta, 11291 Weatherby Rd., Los Alamitos, Calif. 90720

Filed Mar. 22, 1979, Ser. No. 22,857
Int. Cl.³ B05D *1/32*
U.S. Cl. 427—282 **24 Claims**



1. A device for use in covering a surface, said device comprising:

(a) an elongated covering sheet laterally folded along the length thereof to form a folded sheet having first and second sides defined by folds thereof, and having longitudinally extending edges,

said folded sheet being longitudinally rolled, and

(b) securing strip means on said folded and rolled sheet and rolled therewith for securing a first portion of said folded sheet to said surface as said folded sheet and securing strip means are unrolled, whereby after said first portion is secured to said surface a second portion of said folded sheet may be unfolded to increase the extension thereof from said first portion secured to said surface.

12. A method of constructing a roll of masking material for use in masking areas including a vertical surface, said method comprising the steps of:

(a) providing an elongated, laterally folded, sheet of masking material having a pair of sides, and having longitudinally extending edges,

(b) attaching a strip of adhesive tape to said folding sheet along one of said edges with a longitudinal portion of said tapes extending beyond said sheet and outwardly of said one edge, and

(c) longitudinally rolling said folded sheet and said attached

tape to form a cylindrical roll of pre-taped masking material.

23. Apparatus for masking surfaces, said apparatus comprising:

(a) stilt means for increasing the vertical extension of the body of a person from a surface,
said stilt means having an upwardly projecting member to be attached to a leg of said person;

(b) a roll supporting reel having an elongated reel pole and a roll supporting plate rotatably carried by an intermediate portion thereof;

(c) means for attaching an end portion of said reel pole to said upwardly projecting member of said stilt means so that said reel pole extends upwardly from said end portion at an acute angle to said upwardly projecting member of said stilt means; and

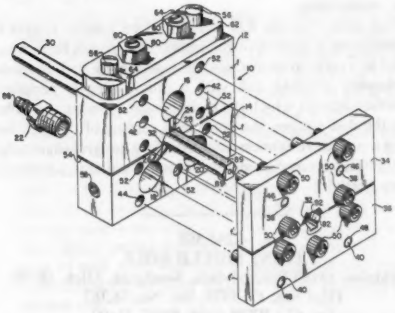
(d) a device as described in claim 1 rotatably mounted on said roll supporting reel.

4,263,348

METHOD FOR STRIPING PENCILS

Charles G. Renegar, Shelbyville, Tenn., assignor to Hasbro Industries, Inc., Pawtucket, R.I.

Division of Ser. No. 780,370, Mar. 23, 1977. This application Jul. 30, 1979, Ser. No. 62,032
Int. Cl.³ B05D *5/00*; B05C *3/02*
U.S. Cl. 427—286 **7 Claims**



1. A method of striping a pencil which comprises moving the pencil longitudinally through a passage in a striping block, said passage having a wall defining raised lands engaging circumferentially spaced side regions of the pencil, directing a stream of striping material onto one of said side regions through an orifice in one of said lands and causing said material to flow from said orifice longitudinally in the direction of movement of the pencil in a channel in said one land as a layer on said one side region having a thickness substantially equal to the thickness of a stripe being formed.

4,263,349

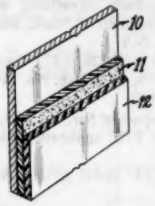
CORROSION RESISTANT COATING

Richard A. Menelly, 34 Merriam St., and Francis X. Doyle, 74 Dawes Ave., both of Pittsfield, Mass. 01201

Continuation of Ser. No. 893,498, Apr. 4, 1978, abandoned. This application Aug. 15, 1979, Ser. No. 66,845
Int. Cl.³ B05D *3/10, 1/36*
U.S. Cl. 427—352 **5 Claims**

1. A method for protecting metal substrates from corrosion comprising the steps of:

applying an alkaline coating to a metal substrate said coating consisting of a suspension of an alkaline powder within a



plastic resin and leaching the alkaline powder from the resin upon contact with acid substances.

4,263,350

SILANE RELEASE SURFACES ON GLASS

James L. Valimont, Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 31, 1979, Ser. No. 108,929
Int. Cl.³ B05B *3/00*; B32B *9/04*
U.S. Cl. 427—352 **7 Claims**

1. In a method for treating a glass substrate with dimethyldichlorosilane to develop a release surface, the improvement which comprises adding a small effective amount of trimethylchlorosilane to the dimethyldichlorosilane to provide for an easily cleanable treated release surface.

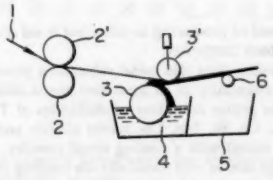
4. The method according to claim 1 which further comprises the step of cleaning the treated release surface, whereby a residue produced on the release surface by the silane treatment is removed by contact with a polar solvent.

4,263,351

COATING METHOD

Takahiko Kazama; Masahito Hongo, and Yutaka Okuyama, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,933
Int. Cl.³ B05D *3/12*; B05C *11/02*
U.S. Cl. 427—355 **8 Claims**



1. A coating method comprising coating a moving thermoplastic sheet having a thickness not smaller than 150μ with a liquid coating agent in excess amount and then contacting a freely rotating metering bar rotating at a peripheral speed within ±10% of the moving speed of said sheet with the coated surface of said sheet.

4,263,352

AQUEOUS DISPERSION COATING COMPOSITION AND APPLICATION TO MOLDED ARTICLES

Thomas F. Kaltenbach, Westland, and John G. Martyn, Huntington Wood, both of Mich., assignors to Grow Group, Inc., New York, N.Y.

PCT No. PCT/US79/00526, § 371 Date Jul. 23, 1979, 102(e) Date Jul. 23, 1979, PCT Pub. No. WO80/00447, PCT Pub. Date Mar. 20, 1980

Continuation-in-part of Ser. No. 935,168, Aug. 21, 1978, abandoned. This PCT application filed Jul. 23, 1979, Ser. No. 64,024

Int. Cl.[3] B05D *3/02;* C08L *63/00*

U.S. Cl. 427—379 14 Claims

1. An aqueous dispersion coating composition consisting essentially of an epoxy powder paint and a water carrier wherein the water carrier has dissolved therein a water soluble nonionic surfactant in an amount ranging from about 0.01 to about 10% by weight (PBW) of the dry epoxy material and a dispersing agent in an amount from about 0.01 to 10 PBW of the dry epoxy material, wherein the pigment volume concentration of the coating composition is at least 10.

7. A method of coating formed fiber reinforced plastics comprising the steps;

1. applying an aqueous dispersion coating composition of claim 1 to the fiber reinforced plastic;
2. flashing off the water from the applied dispersion composition; and
3. curing the coating composition.

4,263,353

FLAME SPRAY POWDER MIX

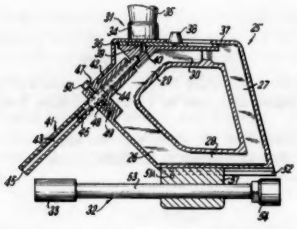
Mahesh S. Patel, Albertson, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 915,939, Jun. 15, 1978. This application Aug. 15, 1979, Ser. No. 66,870

The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.

Int. Cl.[3] B05D *1/08, 1/10*

U.S. Cl. 427—423 10 Claims



1. A method of producing an adherent bond coat on a metal substrate which comprises,

flame spraying onto said metal substrate a powder mix consisting essentially of at least one metal silicide selected from the group consisting of disilicides of Ti, Zr, Hf, V, Nb, Ta, Cr, W, Mn, Co, boron silicide and magnesium silicide mixed with a coating metal powder,

the average size of said metal silicide ranging from about 10 to 150 microns and said coating metal powder ranging from about 30 to 140 microns,

the composition of said powder mix ranging from about 2% to 20% by weight of said silicide, with substantially the balance said coating metal powder,

and continuing said spraying to form an adherent bond coat on said substrate characterized by improved bond strength.

4,263,354

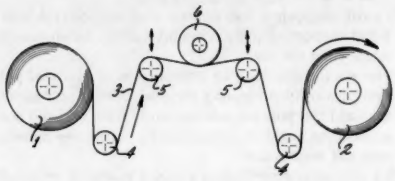
DEMETALIZING A METALIZED, PLASTIC FOIL ALONG A STRIP OR EDGE PORTION

Wilhelm Westermann, Schellingstrasse 7, 6800 Mannheim 1, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 960,067

Int. Cl.[3] B05D *3/12;* B05C *11/02*

U.S. Cl. 427—444 7 Claims



1. Method of partially demetalizing metalized plastic foil along a strip portion thereof, comprising:

passing the foil along a rotating, grinding metal disk having a peripheral surface which has been roughened without addition of particles, an integral roughness thereof being established by sharp edges of surface irregularities of the metal; and

tensioning the strip portion of the foil against the disk without support of the location directly opposite the disk to obtain the demetalization along the strip portion of the foil.

6. Equipment for partial demetalizing a metalized plastic ribbon, comprising:

reeling means for the foil including two tension rollers for tensioning a portion of the ribbon as it passes from a pay-out to a take-up means, also included in the reeling means;

a rotatable grinding disk with a rough integral peripheral surface against which the reeling means tension the ribbon as the disk rotates, the peripheral surface of the disk having a surface roughness established by integral sharp edges of surface irregularities of the metal without addition of any particles.

4,263,355

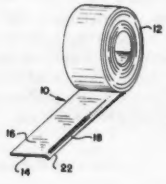
PAINT SHIELD ROLL

Ira Sarkisian, 14180 Pennsylvania, Southgate, Mich. 48195

Filed Sep. 17, 1979, Ser. No. 76,367

Int. Cl.[3] B32B *3/04;* B05C *21/00*

U.S. Cl. 428—124 2 Claims



1. A paint strip shield comprising a roll or a relatively thin resilient strip of non-brittle highly pliable plastic material, said strip having a uniform thickness comprised between about 0.010 in. and 0.060 in. and being laterally flat when rolled in said roll and substantially L-shaped in cross-section after unrolling from said roll, said L-shaped strip having a flat relatively wide portion at least three inches in width and a single bent-over edge flange having a width of about one-half inch to

one inch, said edge flange being disposed at an angle comprised between 90° and 145° to said flat wide portion and said strip is performed to such substantially L-shape and springs back to said substantially L-shape when unrolled from said rolls.

4,263,356

AUTO CEILING PANEL

Takao Nomura, Toyota; Tatsuo Sakamoto, Okazaki, and Yoshiro Umemoto, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

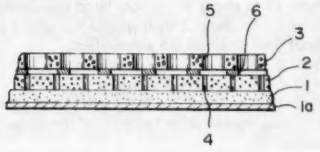
Filed Aug. 3, 1978, Ser. No. 930,874

Claims priority, application Japan, Apr. 10, 1978, 53-041910

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.³ B32B *3/10, 3/26;* **B62D** *25/06*

U.S. Cl. 428—138 **4 Claims**



1. An auto ceiling panel comprising:
- a porous skin having attached thereto a first foamed continuous bubble porous polyurethane slab, having a thickness of 1.0 to 8.0 mm,
- a second foamed polyethylene slab attached to the ceiling side of said first slab, said second slab having a thickness of 1.0 to 4.0 mm and a plurality of openings bored therethrough, said openings having each a diameter of 0.1 to 5.0 mm and their total open space amounting to 0.5% to 30% of the total surface area of said second slab,
- a metal lath fused to said second slab having a thickness of 0.5 to 1.5 mm, and
- a third foamed polyethylene slab fused to said metal lath, said third slab having a thickness of 1.0 to 4.0 mm and a plurality of openings bored therethrough, said openings having each a diameter of 1.0 to 10 mm and their total open space amounting to 1.0 to 50% of the total surface area of said third slab and a majority thereof being in communicating relation relative to the openings in the second slab.

4,263,357

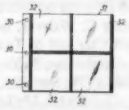
PHOTO ALBUM PAGE

Sheldon Holson, Wilton, Conn., assignor to The Holson Company, Wilton, Conn.

Division of Ser. No. 37,701, Apr. 10, 1979. This application Jun. 23, 1980, Ser. No. 161,875

Int. Cl.³ B32B *3/10, 27/10;* **G09F** *1/10*

U.S. Cl. 428—138 **2 Claims**



1. An improved photographic album page comprising a first rectangular fibrous non-heat sealable lamina; second and third heat sealable laminae of substantially similar overall dimensions; said second and third laminae being positioned in congruent relation with the said first lamina positioned therebetween, said second and third laminae being interconnected through said first lamina by non-continuous heat sealed lines of electronic stitching to form plural print-receiving pockets which stitching avoids completely severing the first lamina along the lines of stitching.

4,263,358

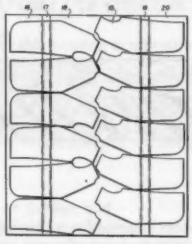
MULTIZONAL BINDER IMPREGNATION

Alan Thornton, Halifax, and John S. Uttley, Hebden Bridge, both of England, assignors to Bodina, Ltd., Yorkshire, England

Filed Apr. 25, 1975, Ser. No. 571,888

Int. Cl.² B32B *3/00, 7/14*

U.S. Cl. 428—195 **9 Claims**



1. An interlining material comprising a web of non-woven fibers, said web having a first zone having distributed uniformly therein binder, said first zone disposed proximate to but in out of contacting relationship with a second zone, said second zone having distributed uniformly therein binder, the binding characteristics of said first zone being distinctly different from the binding characteristics of said second zone, said zones being interconnected by an intermediate zone, said intermediate zone containing a mixture of the binder of said first zone and the binder of said second zone, said intermediate zone having binding characteristics that vary between the binding characteristics of said first and second zones, the binders of said first and second zones merging with one another in said intermediate zone said intermediate zone separating said first zone and said second zone having a width of at least 5 mm, said first zone and said second zone having a width of at least 5 cm, said zones being of a continuous length and running longitudinally.

7. An interlining material according to claim 1 carrying a discontinuous adhesive coating thereon.

4,263,359

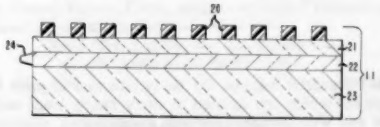
CHARGE RECEPTOR FILM FOR CHARGE TRANSFER IMAGING

Earle L. Kitts, Jr., West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 5, 1979, Ser. No. 27,443

Int. Cl.³ B32B *3/14;* **G01D** *15/06;* **G03G** *5/02*

U.S. Cl. 428—195 **13 Claims**

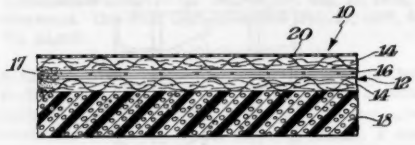


1. A charge receptor film element for charge-transfer imaging which comprises, in order,
- (a) a support,
- (b) a conductive layer,
- (c) a thin transparent dielectric layer bearing
- (d) substantially uniformly sized and spaced opaque polymerized non-conductive dots covering less than 10% of the total area of layer (c), the opaque dots providing less than 0.05 background optical density and having a height of at least 3 micrometers.

4,263,360
COATED PAPER-MICROFOAM SHEET PACKAGING MATERIAL

Herbert B. Adelman, Wilmington, Del., assignor to The Crowell Corporation, Newport, Del.

Filed Jul. 7, 1980, Ser. No. 166,079
Int. Cl.³ B32B 7/02
U.S. Cl. 428—238 **11 Claims**



1. A laminated sheet material for packaging a moisture-sensitive material comprising a layer of paper material, a layer of a sealed cell microporous foam polymer, a strong adhesive material securely binding the microporous foam polymer and paper layers together, and a layer of a polymer which excludes the passage of drops of water but transmits moisture vapor through it on the side of the paper material opposite the microporous foam layer whereby condensate within the package may evaporate out through the laminated sheet material.

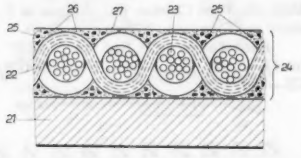
2. A laminated sheet material as set forth in claim 1, wherein the layer of paper material is reinforced.

3. A laminated sheet material as set forth in claim 2, wherein the layer of paper material is reinforced by fiberglass strands.

4,263,361
LAMINATED MATERIAL FOR THE PRODUCTION OF PLAIN BEARING ELEMENTS

Erich Hodes, Rodheim, and Danilo Sternisa, Nauheim, both of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden-Schierstein, Fed. Rep. of Germany

Filed Nov. 10, 1977, Ser. No. 850,159
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1976, 2654644
Int. Cl.² B32B 5/16
U.S. Cl. 428—240 **23 Claims**



1. Laminated material for the production of plain bearing elements which are adapted to carry heavy loads and to be heat and wear resistant and maintenance free, comprising in combination:

(a) a carrier strip in the form of a thin band,

(b) a composite facing member of woven textile material,

(c) said facing member having a low-friction component on one side, comprising textile strands of synthetic material constituting a sliding bearing surface, and having a glueable component on the other side, comprising textile strands of natural material constituting a bonding surface,

(d) a bonding agent securing the glueable component of the facing member to the carrier strip whereby said member presents its sliding bearing surface, in exposed position,

(e) said bonding agent having mixed in it particles of friction reducing and heat-conducting material, and further having mixed in it fibrous reinforcing fillers which contribute to the strength of the bond between the facing member and carrier strip.

4,263,362
COATING COMPOSITION FOR GLASS FIBERS AND COATED GLASS FIBERS MADE FROM SAME

Daniel C. Straka, Sewickley, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 23, 1979, Ser. No. 96,956
Int. Cl.³ B32B 7/00
U.S. Cl. 428—258 **16 Claims**

1. An elastomeric coating composition for glass fibers to produce weaveable coated glass fiber strands with improved processability, having in weight percent on an aqueous basis:

(a) about 1 to about 15 elastomeric plasticizer,

(b) about 10 to about 40 carboxylated elastomeric latex,

(c) about 0.1 to about 2 hydrophilic/lipophilic agent,

(d) about 0.05 to about 0.5 antioxidant,

(e) about 0.1 to about 2 wax emulsion,

(f) about 0.05 to about 0.5 amine,

(g) about 0.05 to about 2 polyhydroxylated glycol wherein the coating composition has a pH in the range of about 8.7 to about 9.5.

4,263,363
EMULSION-CONTAINING ABSORBENT ARTICLE HAVING IMPROVED WATER HOLDING CAPACITY

Charles E. Buck, Caldwell, and Robert C. Roga, Spotswood, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,817
Int. Cl.³ B32B 5/18, 7/02
U.S. Cl. 428—284 **11 Claims**

1. An absorbent pad capable of immobilizing aqueous fluids as a stable viscous water-in-oil emulsion comprising a porous flexible resilient oleophilic substrate having a void volume of at least 50% of the total volume and an oily self-emulsifying emulsion concentrate comprising an oil or hydrocarbon solvent and at least one water-in-oil forming emulsifier having a total HLB value of from 2 to 7, the weight ratio of the oil or hydrocarbon solvent to emulsifier ranging from about 50:50 to about 95:5, said emulsion concentrate being impregnated over at least a portion of the oleophilic substrate as a thin film, said concentrate being present in an amount just sufficient to wet the walls of the porous substrate in the portion in which is is impregnated.

4. The absorbent pad of claim 1 which further comprises a liquid impervious layer on one major surface of the oleophilic substrate and a liquid permeable layer on the other major surface of the oleophilic substrate.

4,263,364
STAMPABLE REINFORCED THERMOPLASTIC POLYESTER SHEETS

Robert W. Seymour; James C. Weaver, both of Kingsport, and Benny W. Wright, Bluff City, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,806
Int. Cl.³ B32B 27/34
U.S. Cl. 428—287 **15 Claims**

1. A stampable sheet of reinforced thermoplastic material, said sheet comprising a plurality of layers of polyester material and a plurality of layers of reinforcing material integrally formed together, the central layer or layers of polyester material being of more slowly crystallizing material than the outer layers;

said polyester layers being substantially amorphous and made of polyester polymers selected from the group consisting of

a. poly(ethylene terephthalate);

b. copolymers of poly(ethylene terephthalate) having about 5 to about 50 mole percent of 1,4-cyclohexanedimethanol, neopentyl glycol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, bisphenol A, isophthalic acid or 1,4-cyclohexanedicarboxylic acid;

c. poly(1,4-cyclohexylenedimethylene terephthalate);

d. copolymers of poly(1,4-cyclohexylenedimethylene terephthalate) having about 20 to about 50 mole percent of ethylene glycol, neopentyl glycol, 2,2,4,4-tetramethyl-1,3-cyclobutanediol, bisphenol A, isophthalic acid, or 1,4-cyclohexanedicarboxylic acid;

e. blends of poly(ethylene terephthalate) with greater than 35 weight percent of any of said copolymers in item (b) or item (d); and

f. blends of poly(1,4-cyclohexylene dimethylene terephthalate) with greater than 35 weight percent of any of said copolymers in item (b) or item (d);

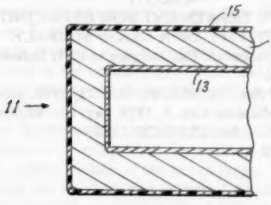
said outer polyester layers having a minimum crystallization half-time upon heating of one minute or less, and said central polyester layer or layers being selected from the polymers identified in items b, d, e or f above and having a minimum crystallization half-time upon heating of greater than one minute, the minimum crystallization half-time being that as measured with respect to each individual layer of said polyester material.

4,263,365

FIRE-RESISTANT SAFE AND PANEL

George M. Burgess, Webster, and Roland M. Avery, Jr., Pittsford, both of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.

Filed Aug. 2, 1979, Ser. No. 62,910
Int. Cl.³ B32B *5/18*
U.S. Cl. 428—310 **24 Claims**



22. An energy saving construction material capable of absorbing significant quantities of solar heat during a hot day and releasing and re-radiating a significant amount of the absorbed heat during a cool night, said material comprising a substantially solidified composition whose principal ingredients are foamed cementitious material, recycled cellulose fibers, sodium sulfate, and water, the cellulose fibers and sodium sulfate serving to retain water in the form of absorbed and/or chemically bonded water, the cellulose fibers and sodium sulfate being present in sufficient quantity so that the total water content of the solidified composition, including absorbed and chemically bonded water, is not less than about 29% by weight of the composition.

4,263,366

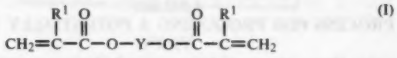
RADIATION CURABLE COATING COMPOSITION COMPRISING AN OLIGOMER AND A COPOLYMERIZABLE ULTRA-VIOLET ABSORBER

Donald H. Lorenz, Basking Ridge, N.J., and Bruce A. Gruber, Worthington, Ohio, assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 6,787, Jan. 26, 1979, Pat. No. 4,178,303. This application Sep. 27, 1979, Ser. No. 79,550
Int. Cl.³ C08J *3/28*; C08F *2/48, 20/68*
U.S. Cl. 428—332 **21 Claims**

1. A radiation curable coating composition comprising:

A. An oligomer of Formula I:



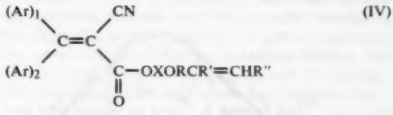
(I)

wherein:

R^1 is hydrogen or methyl; and

Y is a divalent urethane residue; and

B. a copolymerizable ultra-vioiet light absorber compound of Formula IV:



(IV)

where:

$(Ar)_1$ and $(Ar)_2$ are aromatic carbocyclic nuclei of the benzene and naphthalene series and are independently selected from phenyl or phenyl substituted with alkyl, halo, alkoxy, carboxy, carbalkoxy, cyano, acetyl, benzoyl, phenyl, alkyl phenyl, phenoxy phenyl, alkyl substituted phenoxy, or alkoxy phenyl substituted phenyl and naphthyl;

X is alkylene, C_2–C_{17}, unsubstituted or substituted with halo, cyano, alkyl, C_1–C_6, alkoxy, C_1–C_6 alkoxyalkyl, C_1–C_6, or alkoxyalkyleneoxy, C_1–C_6;

R is alkylene, C_1–C_{10}, oxyalkylene, C_1–C_{10} alkyleneoxyalkylene, C_1–C_{10} phenylene, C_1–C_{10}, unsubstituted or substituted with hydroxy; and

R′ and R″ are independently hydrogen or alkyl, C_1–C_6.

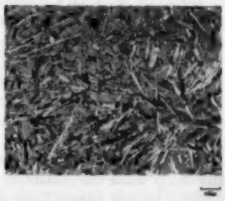
21. A laminate comprising a planar sheet of clear polyvinyl chloride with a film coating 0.1 to 10 mils in thickness comprising a cured coating composition of claim **1**.

4,263,367

DISCONTINUOUS GRAPHITE FIBER REINFORCED GLASS COMPOSITES

Karl M. Prewo, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 7, 1979, Ser. No. 92,168
Int. Cl.³ F06B *9/26*; C03C *13/00*
U.S. Cl. 428—338 **9 Claims**



1. A graphite fiber reinforced glass composite comprising high strength and high modulus of elasticity discontinuous

graphite fibers laid up in substantially in-plane random orientation in a glass matrix so as to produce strength and fracture toughness properties greater than that of the glass matrix.

8. A graphite fiber reinforced glass composite comprising about 20% to about 50% by volume high strength, high modulus of elasticity graphite fibers having an average length of about 1 cm to about 3 cm laid up in substantially in-plane random orientation in a low coefficient of thermal expansion glass matrix producing a composite with flexural strength and fracture toughness properties greater than the glass matrix.

4,263,368

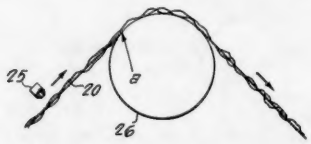
PROCESS FOR PRODUCING A POTENTIALLY BULKY YARN

Yukio Otaki; Masatoshi Mineo; Kiyoshi Nakagawa, all of Mishima; Shiro Nishiumi, and Yoshio Aratani, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 813,177, Jul. 15, 1977, abandoned, which is a continuation of Ser. No. 592,519, Jul. 2, 1975, abandoned. This application Jan. 5, 1979, Ser. No. 1,397

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—373 **13 Claims**



1. In a process for producing a potentially bulky yarn comprising contacting said yarn with a heated body, the improvement comprising: providing a substantially non-twisted multifilament yarn, overfeeding said yarn to a first heated body by means of a pair of overfeed advancing rolls, heating said first heated body to a temperature within the range from the secondary transition point of said yarn to a temperature about 10° C. lower than the melting point of yarn, causing contact of said yarn with said heated body while concurrently vibrating said yarn and subjecting it to tension in the range of about 10–120 mg/d, said tension being imparted by means separate from said overfeed advancing rolls, running said yarn over said heated body at such speed and within such a short period of time that at an imaginary point of contact certain filaments of said yarn are caused to contact said heated boty while the remaining filaments of said yarn are not contacted by said heated body at said imaginery point of contact, and thereafter winding said multifilament yarn.

11. A substantially non-interlaced thermoplastic multifilament yarn produced by the process comprising, providing a substantially non-twisted multifilament yarn, overfeeding said yarn to a first heated body by means of a pair of overfeed advancing rolls, heating said first heated body to a temperature within the range from the secondary transition point of said yarn to a temperature about 10° C. lower than the melting point of said yarn, causing contact of said yarn with said heated body while concurrently vibrating said yarn and subjecting it to tension in the range of about 10–120 mg/d, said tension being imparted by means separate from said overfeed advancing rolls, running said yarn over said heated body at such speed and within such a short period of time that at an imaginery point of contact certain filaments of said yarn are caused to contact said heated body while the remaining filaments of said yarn are not contacted by said heated body at said imaginary point of contact, and thereafter winding said multifilament yarn.

4,263,369

Patent Not Issued For This Number

4,263,370

GRAFT POLYESTERS AND SIZED TEXTILES

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 937,690, Aug. 28, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,896

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—395 **12 Claims**

1. A sized synthetic fiber sized with a graft polyester consisting essentially of the reaction product of

I. an unsaturated polyester comprising the reaction product of:

(a) at least one polycarboxylic acid reactant comprising (1) a dicarboxylic acid reactant selected from the group consisting of dicarboxylic acids, corresponding dicarboxylic anhydrides, dicarboxylic acid esters, and their corresponding acyl halides or (2) a mixture of said dicarboxylic acid reactant with up to 20 mole percent of a polycarboxylic acid reactant having a functionality greater than two based upon 100 mole percent of said dicarboxylic acid reactant and

(b) at least one polyhydric alcohol reactant comprising (1) a diol or (2) a mixture of a diol and up to 20 mole percent of a polyhydric alcohol having a functionality greater than two based upon 100 mole percent of said polyhydric alcohol,

wherein a minor effective proportion of said dicarboxylic acid reactant or polyhydric alcohol reactant is alpha,beta-ethylenically unsaturated and

II. at least one monovinyl monomer reactant comprising at least one carboxylic group or a mixture of said vinyl monomer with any monofunctional vinyl monomer,

wherein said graft polyester is formed by graft polymerization in situ on said fiber of a solventless mixture of said unsaturated polyester and said monovinyl monomer in the presence of a free-radical generating initiator by exposure of said fiber coated with said mixture to at least one of ultraviolet or ionizing radiation either alone or in combination with a temperature of about 80° C. to about 200° C. for a time of about 0.1 minute to about 2 minutes.

4,263,371

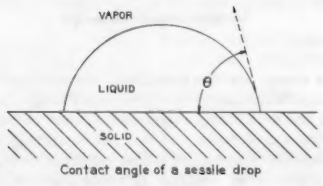
ORGANOTIN TREATMENT FOR REDUCING THE REACTIVITY OF A GLASS SURFACE

Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 954,398, Oct. 25, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 83,084

Int. Cl.[3] B32B *15/00*

U.S. Cl. 428—432 **7 Claims**



Contact angle of a sessile drop

5. A glass article prepared by contacting a glass surface with a composition consisting of an alkyltin compound capable of chemisorption by the glass surface at a temperature insufficient to cause thermal decomposition of the alkyltin compound for a time sufficient to allow chemisorption of the alkytin compound by the glass surface.

4,263,372
METHOD OF COATING AND/OR IMPREGNATING POROUS SUBSTRATES, AND PRODUCTS OBTAINED THEREBY

William D. Emmons, Huntingdon Valley, and Peter R. Sperry, Doylestown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 687,856, May 19, 1976, abandoned.
This application Jun. 12, 1979, Ser. No. 3,055
Int. Cl.[3] B32B *9/04, 13/04;* B05D *3/02*
U.S. Cl. 428—446 9 Claims

1. A method of providing a porous-surfaced formation with a hardened, abrasion-resistant, relatively impermeable surface adapted to resist indentation by impact as well as penetration by moisture and other liquids, thereby rendering such porous-surfaced formation resistant to weathering and atmospheric smog which comprises impregnating the porous surface of the formation with a solution of a metal-containing drier in a liquid mixture of

(A) at least one of dicyclopentenyl acrylate and dicyclopentenyl methacrylate with

(B) about 0.5% to 60% by weight, based on the weight of (A), of another relatively non-volatile monomer selected from the group consisting of C_{12}–C_{30} alkyl and C_{12}–C_{30} alkenyl acrylates and methacrylates,

the amount of drier in the solution being from 0.0005 to 2 weight percent based on the weight of (A), and allowing the applied solution to oxidatively cure in the presence of air at ambient conditions.

7. A product of the process of claim 1.

4,263,373
METHOD OF MAKING AN ULTRA THIN GLUE ADHERABLE DECORATIVE LAMINATE

Harold O. McCaskey, Jr., and Daniel L. Cannady, Jr., both of Allendale, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 24, 1977, Ser. No. 800,124
Int. Cl.[3] B32B *27/08*
U.S. Cl. 428—531 7 Claims

1. A method of making an ultra thin, glue adherable, high pressure decorative thermoset veneer laminate, comprising the steps of:

(A) assembling a laminate stack-up consisting of:

(1) one thermosetting resin impregnated paper sheet having a top decorative surface, and a bottom surface coated with an alginate resinous film, about 0.25 mil to about 5 mil thick, to an alginate content of from between about 2 weight percent and about 40 weight percent of the coated paper sheet, said film being effective to opacify the paper sheet and provide a barrier to resin flow, and

(2) one thermosetting resin impregnated abrasion resistant, protective overlay sheet disposed in contact with the decorative surface of the paper sheet,

(B) placing the stack-up in a press and molding the stack-up at temperatures of between about 100° C. and about 200° C. and pressures of between about 500 psi. and about 2,000 psi., and

(C) cooling and releasing the press and removing the stack-up; wherein the stack-up is heat and pressure consolidated to form a unitary decorative laminate, the laminate having a thickness of between about 5 mil and about 15 mil and a resinous film on one side that is glue adherable without sanding.

4. The method of claim 1, wherein the abrasion resistant protective overlay sheet is about 2 mil to about 5 mil thick.

6. The method of claim 4 also including the additional steps of applying an adhesive directly to the alginate film and glueing the decorative laminate to a thick support to form an adhesive bonded composite.

7. The decorative laminate made by the method of claim 4.

4,263,374
TEMPERATURE-STABILIZED LOW-LOSS FERRITE FILMS

Howard L. Glass, Orange; Michael T. Elliott, Cypress, and Rodney D. Henry, Saratoga, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1978, Ser. No. 918,298
Int. Cl.[3] G11C *11/02*
U.S. Cl. 428—693 6 Claims

1. A composite comprising:

a single-crystal, wherein said substrate is of a material selected from the group consisting of the rare-earth gallium garnets, the mixed rare-earth gallium garnets, the rare-earth aluminum garnets, the mixed rare-earth aluminum garnets, magnesium oxide, the gallate spinels, the indium-gallate spinels, the aluminate spinels, and sapphire;

a monocrystalline film of ferrimagnetic material deposited on said substrate, wherein said ferrimagnetic material is selected from the group consisting of garnet-structured ferrites, spinel-structured ferrites, hexagonal ferrites, and orthoferrites, and wherein a selected amount of a diamagnetic ion is substituted for iron in said ferrimagnetic material, said film having an ordinary extremum at a selected temperature in its variation of ferromagnetic resonance frequency with variations of temperature;

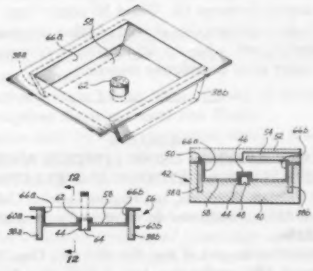
wherein a substrate-film lattice parameter mismatch exists between said substrate and said film whereby stress is established in said film; and

wherein the amount of said substrate-film lattice parameter mismatch and said selected amount of a diamagnetic ion are jointly selected to cause said ordinary extremum in the variation of ferromagnetic resonance frequency of said film with variations in temperature to be at said selected temperature.

4,263,375
SUPERPLASTICALLY FORMED TITANIUM STRUCTURE

Samuel D. Elrod, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 26, 1978, Ser. No. 973,324
Int. Cl.[3] B32B *15/00*
U.S. Cl. 428—594 1 Claim



1. An article of manufacture superplastically formed and diffusion bonded comprising: a pair of spaced apart titanium parts having a Widmanstatten grain structure to render the parts dimensionally stable at superplastic forming conditions; a thin walled hollow insert with end cap, located intermediate the spaced apart titanium parts, and the insert having a Wid-

manstatten grain structure to render the insert dimensionally stable at superplastic forming conditions; a third titanium part superplastically formed and diffusion bonded to facing sides of the pair of parts to form a pair of flanges, and the third part extends between the flanges to form a web superplastically formed and diffusion bonded to the insert end cap and side, and the cap of the insert with diffusion bonded superplastically formed part having a hole extending through to provide a reinforced opening through the superplastically formed web.

4,263,376

FUEL CELL ELECTRODE

Keith F. Blurton, Hinsdale, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 4, 1980, Ser. No. 118,507
Int. Cl.³ H01M *4/86*
U.S. Cl. 429—42 **18 Claims**

1. In a fuel cell electrode of the type comprising porous carbon with high surface area electrocatalyst metal or alloy thereof supported thereon; the improvement comprising nitrogen containing groups affixed to the surface of said carbon providing force interaction between said nitrogen containing groups and said metal improving maintenance of high metal surface area during operation of said fuel cell.

4,263,377

CATHODES FOR PRIMARY SOLID STATE LITHIUM CELLS

Ashok V. Joshi, Levittown, Pa., and Charles C. Liang, Clarence, N.Y., assignors to Duracell International Inc., Bethel, Conn.

Continuation of Ser. No. 960,371, Nov. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,800, Apr. 25, 1977, abandoned. This application Mar. 10, 1980, Ser. No. 129,144
Int. Cl.³ H01M *6/18*
U.S. Cl. 429—50 **14 Claims**

1. A method for increasing the realizable primary energy density of a room temperature operable primary solid state electrochemical cell having a lithium anode, a solid electrolyte comprised of a lithium salt and having a room temperature ionic conductivity in excess of 1×10^{-9} ohm^{-1}cm^{-1}, and a solid cathode comprised of a non-conductive high energy density cathode active material selected from the group consisting of sulfur, selenium, tellurium, bromine and iodine, said method consisting essentially of the step of adding to said cathode active material a second material which is both electronically and ionically conductive and which second material is also cathode active, said second material consisting of one or more metal chalcogenides having electronic and ionic conductivities ranging between 10^{-10} and 10^{2} ohm^{-1}cm^{-1}, whereby said cathode is substantially devoid of other electronic conductive materials and whereby said cathode contains less than 10% of other ionic conductive materials.

4,263,378

PRIMARY BATTERY USING LITHIUM ANODE AND INTERHALOGEN CATHODE AND ELECTROLYTE

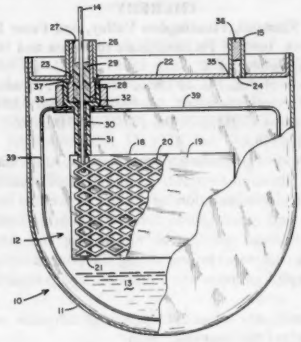
Vladimir Feiman, Roseville, and Eugene Luksha, Golden Valley, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 106,688, Dec. 26, 1979, abandoned. This application Apr. 2, 1980, Ser. No. 136,429
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—105 **4 Claims**

1. In a primary electrochemical cell comprising a receptacle containing an anode and a non-aqueous cathode-electrolyte, and having means for delivering an electrical current flow therefrom;

(a) said anode consisting essentially of lithium;

(b) said cathode-electrolyte consisting of iodine monochloride; and



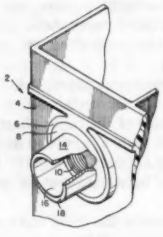
(c) a lithium-aluminum halide selected from the group consisting of lithium-aluminum chloride and lithium-aluminum bromide present in the cathode-electrolyte in a concentration of greater than 1 molar.

4,263,379

STORAGE BATTERY WITH TEMPORARY SIDE TERMINAL

Harry M. Channing, South Lake Tahoe, Calif.; John M. Nees, Wyomissing, and William J. Eberle, Reading, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Feb. 14, 1980, Ser. No. 121,780
Int. Cl.³ H01M *2/02*
U.S. Cl. 429—179 **1 Claim**



1. In a storage battery having generally flat terminals in the side wall for achieving electrical interconnections, the improvement comprising a temporary terminal for use in manufacturing said storage battery, said temporary terminal comprising:

a terminal cast integrally with and extending from said generally flat terminal, said temporary terminal having a conical outer surface which tapers toward a free end thereof and a passageway which extends from the free end thereof through to said flat terminal.

4,263,380
GALVANIC ELEMENT

Werner Riedl, Ellwangen, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Aug. 31, 1979, Ser. No. 71,760
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842697
Int. Cl.³ H01M *6/00*
U.S. Cl. 429—162 **8 Claims**

1. Galvanic element including a positive electrode, a negative electrode, a separator, an electrolyte, and a housing which is closed in liquid-tight manner by a first seal which simultaneously provides electrical insulation between the cell terminals, said element comprising

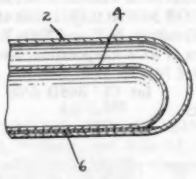
a contact cap which covers one terminal of the cell, the sealing region, and at least a portion of the second terminal of the cell, and

an additional seal which is positioned at least between said covered portion of the second cell terminal and the contact cap.

4,263,381
SINTERING OF BETA-TYPE ALUMINA BODIES USING ALPHA-ALUMINA ENCAPSULATION

Bryan J. McEntire, Salt Lake City, and Anil V. Virkar, Midvale, both of Utah, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 27, 1978, Ser. No. 955,431
Int. Cl.³ H01M *10/39, 2/16*
U.S. Cl. 429—193 **8 Claims**



1. An article of manufacture comprising a tubular capsule consisting essentially of alpha aluminum having a deposit of sodium oxide on its interior surfaces and having encapsulated therein a shaped green beta-type alumina bisque of compacted powder ready for sintering.

5. A method of preparing a sintered beta-type alumina body comprising:

providing a tubular capsule consisting essentially of alpha alumina;

encapsulating a sodium oxide bearing compound capable of releasing sodium oxide vapor at temperatures above 1250° C. within said capsule;

heating said capsule to a temperature in excess of 1250° C. for more than 1 hour to deposit sodium oxide onto the interior surface of said capsule;

cooling said capsule and removing the remaining sodium oxide bearing compound therefrom;

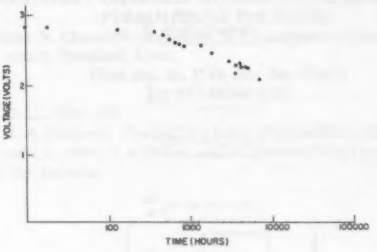
encapsulating a shaped green bisque of compacted beta type alumina powder into said capsule; and

heating said capsule to a sintering temperature in excess of 1500° C. for a sufficient time to provide the sintered beta-type alumina body.

4,263,382
CHARGE TRANSFER COMPLEX CATHODES FOR SOLID ELECTROLYTE CELLS

Demetrios V. Louzos, Rocky River, and Harry Vourlis, Lakewood, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 28, 1980, Ser. No. 134,866
Int. Cl.³ H01M *4/36*
U.S. Cl. 429—213 **11 Claims**

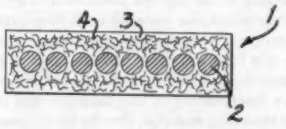


1. A cathode for use in an electrochemical cell comprising a charge transfer complex in which the complex is the reaction product of at least one halogen with a poly(N-vinylpyrrolidone) and wherein the donor component is the poly(N-vinylpyrrolidone) and the acceptor component is the at least one halogen.

4,263,383
ZINC ELECTRODE

Alain Coulombeau, La Roche Blanche, and Georges Peyron, Riom, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jul. 16, 1979, Ser. No. 58,030
Claims priority, application France, Jul. 25, 1978, 78 22199
Int. Cl.³ H01M *4/48, 4/62*
U.S. Cl. 429—217 **10 Claims**



1. A zinc electrode designed to be used in a secondary generator comprising at least one active portion, characterized by the following features:

(a) the active portion has an open porosity of at least 60% and comprises electron conductive fibers;

(b) the active material in the discharged state, at least before the first charge, consists of zinc oxide particles which are distributed practically uniformly throughout the active portion;

(c) the fibers are inert under the conditions of use;

(d) the fibers have no preferential orientation and are assembled at least in part by bridges due to at least one elastomeric material, referred to as elastomeric binder, which is inert under the conditions of use; the fibers and the elastomeric binder thus forming an elastic and porous structure with voids located between the fibers and communicating with each other; and

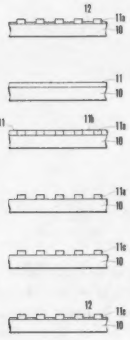
(e) the active material is arranged in the voids between the fibers.

4,263,384

METHOD OF FORMING FLUORESCENT SCREENS OF COLOR PICTURE TUBES

Yoshifumi Tomita, and Masahiro Nishizawa, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 24, 1979, Ser. No. 77,939
Claims priority, application Japan, Sep. 29, 1978, 53-119228
Int. Cl.[3] G03C 5/00
U.S. Cl. 430—25 **3 Claims**



1. A method of forming a black matrix surface on a fluorescent screen of a color picture tube comprising the steps of:

coating a light hardenable photosensitive material on the inner surface of a glass faceplate of said tube to form a photosensitive film;

exposing to light said photosensitive film through a shadow mask;

developing exposed portions of said photosensitive film to remove the unexposed portions;

applying a photo-crosslinkable material to the developed portions of said faceplate;

further hardening by photo-cross linking the exposed portions of said photosensitive film remaining after development by light exposure of said faceplate and subsequent hardening of the exposed portions after application of said photocrosslinkable material until they exhibit hydrophobic property sufficient to prevent penetration and adhesion of a light absorbing material such as graphite;

applying a light absorbing material such as graphite onto the entire inner surface of said faceplate and then drying the light absorbing material, thereby causing said light absorbing material to be deposited on said further hardened exposed portions and adhere only to the portions of said faceplate between said further hardened portions; and

developing the light absorbing material for removing portions thereof deposited on said further hardened portions.

4,263,385

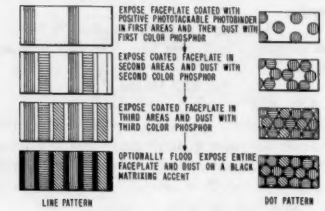
METHOD FOR THE MANUFACTURE OF MULTI-COLOR MICROLITHOGRAPHIC DISPLAYS

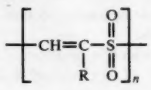
Thomas R. Pampalone, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,794
Int. Cl.[3] B05D 3/06
U.S. Cl. 430—25 **11 Claims**

1. In a method for the manufacture of a multi-color image on a substrate, the improvement which consists essentially of:

(a) coating the surface of the substrate with a film of a positive phototackifiable polyacetylene sulfone polymer having a repeating unit of the formula


EXPOSE FACEPLATE COATED WITH POSITIVE PHOTOTACKABLE PHOTOBINDER IN FIRST AREAS AND THEN DUST WITH FIRST COLOR PHOSPHOR
EXPOSE COATED FACEPLATE IN SECOND AREAS AND DUST WITH SECOND COLOR PHOSPHOR
EXPOSE COATED FACEPLATE IN THIRD AREAS AND DUST WITH THIRD COLOR PHOSPHOR
OPTIONALLY FLOOD EXPOSE ENTIRE FACEPLATE AND DUST ON A BLACK MATRIXING ACCENT
LINE PATTERN
DOT PATTERN



wherein R is a member selected from the group consisting of hydrogen and an organic radical;

(b) exposing a predetermined first area of the film with radiation in an amount sufficient to tackify the exposed first area;

(c) applying to the surface of the film a first color material whereby the first material selectively adheres to the first area;

(d) exposing a predetermined second area of the film with radiation in an amount sufficient to tackify the exposed second area;

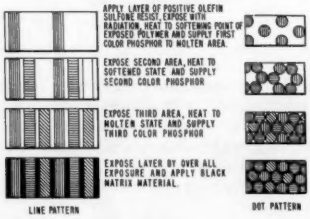
(e) applying to the surface of the film a second color material whereby the second phosphor selectively adheres to the second area.

4,263,386

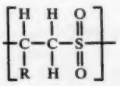
METHOD FOR THE MANUFACTURE OF MULTI-COLOR MICROLITHOGRAPHIC DISPLAYS

Pabitra Datta, Cranbury, N.J., and Nitin V. Desai, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,795
Int. Cl.[3] B05D 3/06
U.S. Cl. 430—25 **8 Claims**


APPLY LAYER OF POSITIVE OLEFIN SULFONE RESIST, EXPOSE WITH RADIATION, HEAT TO SOFTENING POINT OF EXPOSED POLYMER AND SUPPLY FIRST COLOR PHOSPHOR TO MOLTEN AREA
EXPOSE SECOND AREA, HEAT TO SOFTENED STATE AND SUPPLY SECOND COLOR PHOSPHOR
EXPOSE THIRD AREA, HEAT TO MOLTEN STATE AND SUPPLY THIRD COLOR PHOSPHOR
EXPOSE LAYER BY OVER ALL EXPOSURE AND APPLY BLACK MATRIX MATERIAL
LINE PATTERN
DOT PATTERN

1. The method for adhering a plurality of different colored material to a substrate with the individual colored material in a predetermined pattern, said method comprising the steps of applying to a surface of the substrate a layer of an olefin sulfone polymer having repeating units of the formula



wherein R is an organic radical, said polymer being nonadhesive at a first temperature, exposing the polymer in preselected

area of the substrate to radiation in an amount sufficient to reduce the softening temperature of the exposed polymer to a second temperature at which the exposed polymer is adhesive, maintaining said substrate at said second temperature or higher but below said first temperature while providing a supply of one of said colored materials to the resulting softened area of exposed polymer whereby the colored material selectively adheres to the exposed area and thereafter repeating the steps of exposing, heating and provision of colored material for each of the additional colored materials in other preselected areas of the substrate to provide said predetermined pattern.

4,263,387

LITHOGRAPHIC PRINTING PLATE AND PROCESS FOR MAKING SAME

Ferdinand Martinez, Belmont, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Mar. 16, 1978, Ser. No. 887,189
Int. Cl.[3] G03G *13/32*
U.S. Cl. 430—49 **12 Claims**

1. A method of making a direct-imaged flexible printing plate suitable for use in offset or the like lithographic printing from an electrophotographic member having a substrate and a high gain, sensitive, electrically anisotropic, photoconductive coating deposited upon the substrate which coating is sputtered, wholly inorganic, microcrystalline, generally uniformly oriented vertically relative to the surface of the substrate, having light transmissivity of at least 70 percent, having a dark resistivity of at least 10^{12} ohm - centimeters and a ratio between dark and light resistivity of at least about 10^4, electrically anisotropic, flexible, transparent, dense and has an abrasion-resistant surface, which method comprises: charging the surface of the electrophotographic member in darkness, immediately thereafter exposing the surface to a radiation projected image to form a latent image of charge on said surface, toning the surface to develop the latent image with a hydrophobic toner and thereafter applying an acidic aqueous solution of an oxidizing agent having an oxidation potential higher than the chromate ion to the toner surface whereby to impart to the surface only of the non-imaged areas a hydrophillic coating maintaining the sub-surface of the said areas as well as the imaged areas intact and hydrophobic.

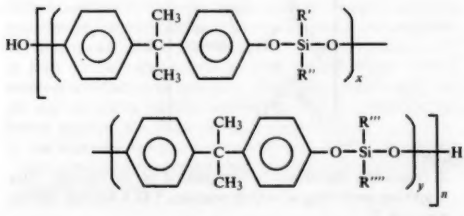
4,263,388

ELECTROPHOTOGRAPHIC IMAGING DEVICE

Richard L. Schank, Webster, and John M. Pochan, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1979, Ser. No. 100,167
Int. Cl.[3] G03G *5/06, 5/04, 5/14*
U.S. Cl. 430—59 **5 Claims**

1. An imaging member comprising a charge generation layer comprising a layer of photoconductive material and a contiguous charge transport layer of a charge transport material dissolved in a polymer of the following structure:



wherein R', R'', R''' and R'''' are independently selected from the group consisting of alkyl and alkylene groups having from 1 to 12 carbon atoms, there being no more than 1 alkylene group present, x is from 4 to 5, y is from 0 to 1, n is a whole number and said polymer has a molecular weight ranging from about 1500 to about 120,000, said transport layer being substantially nonabsorbing in the spectral region at which the photoconductive layer generates and injects photogenerated holes, but is capable of supporting the injection of photogenerated holes from said photoconductive layer and transporting said holes through said charge transport layer.

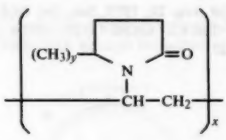
4,263,389

POSITIVELY CHARGED TONERS CONTAINING VINYL PYRROLIDONE POLYMERS

Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 16, 1979, Ser. No. 57,630
Int. Cl.[3] G03G *9/00*
U.S. Cl. 430—106 **8 Claims**

1. A positively charged dry toner composition comprised of a resin, a colorant, a carrier, and polymers of vinyl pyrrolidone of the formula:



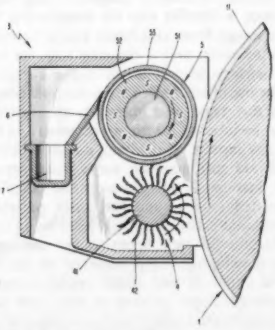
wherein x is a number of from about 20 to 1,800 and y is zero, or 1.

4,263,390

RESIDUAL TONER REMOVING DEVICE

Keitaro Yamashita, Kamisato, and Ryuji Goto, Kumagaya, both of Japan, assignors to Hitachi Metals, Ltd, Chiyoda, Japan

Filed Jan. 22, 1979, Ser. No. 5,213
Claims priority, application Japan, Jan. 24, 1978, 53/6547
Int. Cl.[3] B05C *11/10*
U.S. Cl. 430—125 **11 Claims**



1. A device for removing residual magnetic toner remaining on the surface of a photoreceptor, the device comprising:

means for only aligning the residual toner on the photoreceptor substantially in streaks during relative movement between the photoreceptor and the aligning means, said aligning means being positioned adjacent the photoreceptor surface; and

means for magnetically attracting the aligned toner to remove the aligned toner from the surface of the photoreceptor, said attracting means being positioned adjacent the photoreceptor surface,

wherein the photoreceptor is rotating and wherein the align-

ing means includes a rotatable fur brush in an at least slight contact relation with the surface of the photoreceptor;

wherein the magnetically attracting means includes a magnet roll having a shaft, a permanent magnet member positioned around the shaft, the permanent magnet member having a plurality of axially elongated magnetic poles on the surface, and a cylindrical nonmagnetic shell surrounding the permanent magnet member and being relatively rotatable to the permanent magnet member, the magnet roll being positioned in a spaced relation to the surface of the photoreceptor; and

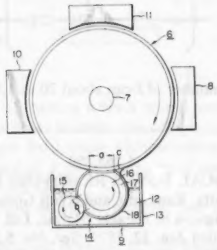
wherein the device further includes a scraper blade adjacent the surface of the shell for scraping attracted toner off the magnet roll.

4,263,391

LIQUID DEVELOPMENT PROCESS WITH POROUS ELASTIC DEVELOPMENT CLEANING ROLLER

Takashi Saito, Ichikawa, and Tsuyoshi Watanabe, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1979, Ser. No. 68,420
Int. Cl.³ G03G *15/10, 15/16*
U.S. Cl. 430—125 **9 Claims**



1. An electrophotographic process involving the repeated cycles of a developing step for developing an electrostatic latent image formed on a latent image carrying member with a liquid developer, a transfer step for transferring the thus obtained visible image from said latent image carrying member onto another member, and a cleaning step for subsequently cleaning the surface of said latent image carrying member, comprising the use of an elastic rotary member composed of an electroconductive rigid core member, an electroconductive porous elastic member of a volume resistivity in the range of 10^2 to 10^8 Ω-cm capable of retaining a liquid therein and provided around said core member, and a liquid-permeable insulating flexible member of a thickness in the range of 20 to 400 microns provided to surround the outer periphery of said elastic member, said elastic rotary member being maintained in pressure contact with said latent image carrying member, whereby said developing step is achieved by the liquid developer squeezed out from said elastic rotary member and the excessive liquid developer present on said latent image carrying member is recovered therefrom by absorption upon recovery of said elastic rotary member from the compressed state thereof.

4,263,392

ULTRA HIGH SPEED PRESENSITIZED LITHOGRAPHIC PLATES

Thomas H. Jones, Naperville, Ill., assignor to Richardson Graphics Company, Des Plaines, Ill.

Filed Jun. 1, 1979, Ser. No. 44,531
Int. Cl.³ G03C *1/54, 1/71;* **G03F** *7/08*
U.S. Cl. 430—169 **26 Claims**

1. A method of transforming a presensitized lithographic plate into an ultra high speed presensitized lithographic plate comprising:

selecting a plate having a photosensitive negative-working diazonium material from the group consisting of diazonium compound or diazonium resin layer thereon; and

treating said substrate surface prior to exposure thereof by contacting said diazonium layered surface with an extracting agent composition, said extracting agent composition being one in which said diazonium material is highly soluble and being a composition that does not significantly adversely affect said presensitized plate, said treating procedure including applying said extracting agent composition to said substrate surface for a length of time sufficient to solublize and extract into said composition substantially all of said diazonium material, and thereafter removing from the plate a substantial amount of said composition into which said diazonium material has been extracted, whereby the quantity of said diazonium material after said treating procedure is of sufficient quantity in said layer to form a lithographic image on the plate.

4,263,393

NOVEL ELECTRON DONOR PRECURSORS AND PHOTOGRAPHIC ELEMENT CONTAINING THEM

Chin H. Chen, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

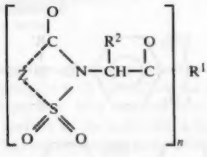
Filed Sep. 6, 1979, Ser. No. 72,871
Int. Cl.³ G03C *1/40, 7/00, 5/54, 1/10*
U.S. Cl. 430—218 **37 Claims**

12. In an image transfer film unit processable with an alkaline processing composition containing an electron transfer agent, the film unit comprising:

(a) a photographic element comprising a support and a silver halide emulsion having associated therewith an immobile compound which upon reduction under alkaline conditions will release a diffusible dye or photographic reagent;

(b) an image-receiving layer; and

(c) an electron donor precursor; the improvement wherein the electron donor precursor comprises a compound represented by the structural formula:



wherein:

Z represents the atoms to complete a bi- or tricyclic ring system, each ring of which contains 5 to 6 nuclear atoms;

n is 1 or 2;

R^1 is a monovalent aromatic group when n is 1 and a bivalent aromatic group when n is 2; and

R^2 represents hydrogen, an alkyl group, an aryl group, an acyl group, an ester group or an amido group.

4,263,394
AQUEOUS ALKALINE SOLUBLE PHOTOPOLYMERIZABLE MATERIAL

Allen P. Gates; Stephen C. Hinch, and Christopher V. Withers, all of Leeds, England, assignors to Vickers Limited, Great Britain

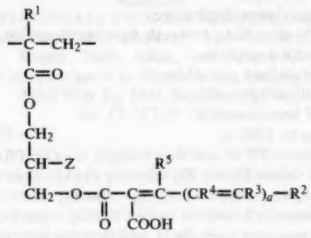
Continuation of Ser. No. 753,281, Dec. 22, 1976, abandoned. This application Jun. 18, 1979, Ser. No. 49,272

Claims priority, application United Kingdom, Dec. 23, 1975, 52522/75

Int. Cl.[3] **G03C** *1/68*

U.S. Cl. 430—287 **9 Claims**

1. A polymer which includes a plurality of structural units represented by Formula (I):



in which R^1 represents a hydrogen atom or a methyl group; R^2 represents a hydrogen atom, an alkyl or substituted alkyl group, an aryl or substituted aryl group, or a heterocyclic or substituted deterocyclic group; R^3, R^4 and R^5, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an aralkyl group, an aralkoxy group or an alkoxy carbonyl group; Z represents a hydroxyl group or an ester group and a is an integer greater than or equal to 1, the number of said structural units in the polymer being such that the polymer is photopolymerizable and soluble in aqueous alkaline solution.

4,263,395
HIGH INTENSITY PHOTON-IMAGE RECORDING

Gerard A. Delzenne, 's-Gravenwezel, and Hendrik E. Kokelenberg, Merksem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Continuation of Ser. No. 851,627, Nov. 15, 1977. This application Apr. 18, 1979, Ser. No. 31,151

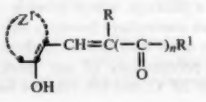
Claims priority, application United Kingdom, Nov. 18, 1976, 48134/76

Int. Cl.[3] **G03C** *1/52, 5/24, 5/04*

U.S. Cl. 430—332 **11 Claims**

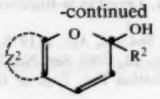
1. A recording method which is insensitive to daylight exposure while capable of directly forming a visible image by controlled laser beam exposure, which method comprises exposing a recording material information-wise to ultra-violet radiation, in the range of 200 nm to 400 nm, with a radiation intensity of at least 5×10^{11} erg/sq.cm.s so that the recording material receives a radiation energy dose of at least 1×10^{7} erg/sq.cm, the said recording material containing in a layer of an organic binder medium a mixture consisting essentially of:

(A) at least one dye precursor compound, which is a spiropyran compound or a compound corresponding to one of the general formulae



(I)

-continued



(II)

wherein:

R represents hydrogen, a lower alkyl (C_1-C_3) group, phenyl or phenyloxy,

R^1 represents an organic group,

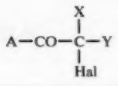
Z^1 represents the necessary atoms to close a homocyclic ring or ring system including such a ring or ring system in substituted state,

Z^2 represents the necessary atoms to close a homocyclic ring or ring system,

R^2 represents a lower alkyl (C_1-C_5) group, and

n is 1 or 2,

(B) at least one organic UV-sensitive compound corresponding to one of the following general formulae



(III)

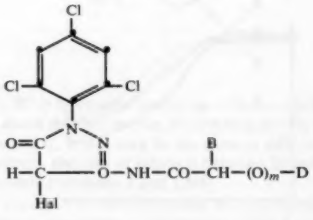
wherein:

A is phenyl, alkoxyphenyl or methyl,

X is hydrogen or phenyl,

Hal is a chlorine or bromine atom and

Y is alkoxycarbonyl, phenyl, phenylcarbonyl, phenylsulfonyl, or a phenylcarbamoyl group,



(IV)

wherein:

m is 0 or 1,

Hal is a chlorine or bromine atom,

D is an alkyl-substituted phenyl group, and

B is hydrogen or alkyl containing up to two carbon atoms, said UV-sensitive compound exhibiting when present in a test recording material as defined in the specification and

(a) subjected to test exposure (X) as defined in the specification a density increase at the wavelength of maximum absorption in the visible light range of not more than 0.15, the density measurement being a totally diffuse density measurement, and

(b) when subjected to test exposure (Y) as defined in the specification a white light specular density of at least 0.35 above inherent fog.

4,263,396

DIRECT-POSITIVE PHOTOGRAPHIC MATERIAL

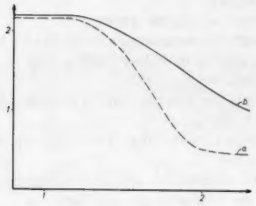
Sieghart Klotzer; Erik Moisar, both of Cologne, and Harald von Rintelen, Leverkusen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen-Bayerwerk, Fed. Rep. of Germany

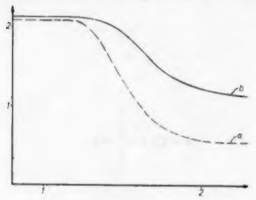
Continuation of Ser. No. 564,042, Apr. 1, 1975, abandoned. This application Jan. 10, 1980, Ser. No. 111,166

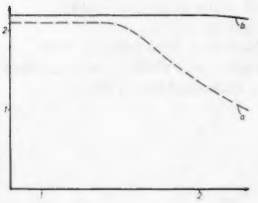
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1974, 2416814

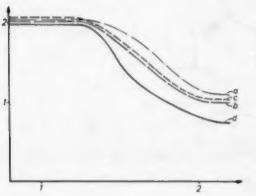
Int. Cl.[3] G03C *5/24, 1/34*

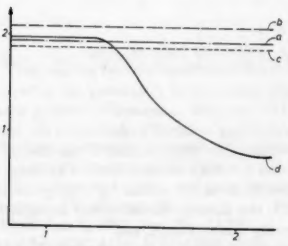
U.S. Cl. 430—409 9 Claims











1. A light sensitive photographic material having a direct positive emulsion of improved stability comprising a support and on the support at least one unfogged silver halide emulsion layer containing silver halide grains of a layered grain structure and containing centers for the deposition of photolytic silver within the grains wherein the improvement comprises the silver halide emulsion contains a stabilizing compound which maintains exposed areas of the silver halide emulsion from becoming developable and having a Q value of at least 2, the Q value being the quotient of the density values D_1 and D_2 which are produced by exposing said unfogged direct positive emulsion containing 10^{-2} to 10 millimol of the said compound per mol of silver and 3.1 g of silver per m^2 in the form of silver halide behind a grey wedge, storing the exposed layer at 60° C. and 40% relative humidity for 72 hours and treating it in the following developer:

1 g of acetylphenylhydrazine,
10 g of N-ethyl-N-hydroxyethyl-p-phenylenediamine,
2 g of sodium sulphite
40 g of trisodium phosphate,
5 g of solium hydroxide,
0.05 g of benzimidazole
Water up to 1000 ml

for 5 minutes at 20° C. and then fixing it is an acid fixing bath, the density values D_1 and D_2 referring to exposures at intensities I_1 and I_2 where the first density value D_1 refers to the first exposure intensity I_1 and the second density value D_2 refers to the second exposure intensity I_2, said first exposure intensity I_1 being the intensity of exposure at which the tangent to the density curve of an exposed and developed layer of said silver halide emulsion free of said stabilizing compound and absent said temperature and humidity treatment intersects the value of maximum density of said compound-free emulsion, said tangent being at half the maximum density of said compound-free emulsion and the second exposure intensity I_2 being the intensity of exposure at which said tangent to the density curve at half the maximum density of said compound-free emulsion intersects the value of the minimum density thereof, the maximum density of said emulsion containing said stabilizing compound being reduced by less than 50% of said maximum density of said compound-free emulsion, said stabilizing compound is a mercapto-substituted N-heterocyclic compound which has a Q value of at least 2.

4,263,397

PHOTOGRAPHIC PRODUCTS

Akira Horikoshi, and Zene Kumagai, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,608

Claims priority, application Japan, May 24, 1977, 52-60207

Int. Cl.[3] G03C *1/76*

U.S. Cl. 430—542 14 Claims

1. A process of sealing a light-sensitive photographic silver halide material comprising a support and a silver halide emulsion layer containing a development-inhibitor-releasing compound coated thereon and containing a sensitizing dye or a desensitizing dye in a package, which process comprises sealing said package in an atmosphere having a partial pressure of an oxygen gas of not more than 1/6 atmosphere, said package having an oxygen permeability of not more than 5×10^2 cc/m^2,24 hrs. atm. at 20° C. and 0% relative humidity.

4,263,398

9-(P-DIETHYLAMINOPHENYL)-9-CHLORO-10-PHENYLACRIDAN AGAR MEDIUM

James J. Miyashiro, Woodstock, Ill., and Lorraine M. Marold, Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Continuation of Ser. No. 953,447, Oct. 23, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 67,610

Int. Cl.³ C12Q *1/04*

U.S. Cl. 435—34 **1 Claim**

1. An agar medium for the selective isolation of *Pseudomonas aeruginosa* from other bacterial species containing 30 μg./ml. of 9-(p-diethylaminophenyl)-9-chloro-10-phenylacridan.

4,263,399

HIGH PHOSPHATE PROCESS FOR MAKING LOW CALCIUM, SMOOTH FLOW XANTHAN GUM

Richard A. Empey, Tulsa, Okla., and Jurgen G. Dominik, Bonita, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 31, 1979, Ser. No. 44,144

Int. Cl.³ C12P *19/06*

U.S. Cl. 435—104 **5 Claims**

1. In a process for preparing low calcium, smooth flow xanthan gum by the whole culture fermentation of *Xanthomonas campestris* in an aqueous medium containing up to about 4 ppm of calcium ion per each 1% of xanthan gum concentration in the completed fermentation broth the improvement which comprises adding from 0.7% to 1.0% phosphate to the medium.

4,263,400

IMMOBILIZED ENZYMES

Soichiro Ushiro, Kokubunji, Japan, assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jan. 11, 1979, Ser. No. 2,839

Claims priority, application Japan, May 12, 1978, 53-55691

Int. Cl.³ C12N *11/02*; C12P *19/24*; C12N *9/92*

U.S. Cl. 435—177 **10 Claims**

1. A method for the production of immobilized glucose isomerase comprising:

(a) obtaining a crude glucose isomerase preparation containing a high molecular weight, nondialyzable polysaccharide which inhibits adsorption of said glucose isomerase on an ion exchange resin from a microorganism which produces and retains the glucose isomerase substantially intracellularly;

(b) separating said polysaccharide from said glucose isomerase preparation to give a purified glucose isomerase essentially completely free of said polysaccharide; and then

(c) contacting a solution of the purified glucose isomerase with an ion exchange resin to absorb and immobilize said glucose isomerase thereon, said ion exchange resin being one capable of adsorbing said polysaccharide which inhibits adsorption of said glucose isomerase.

4,263,401

THERMOPLASTIC, ELASTOMERIC POLYSTYRENE/DIORGANOPOLYSILOXANE BLOCK COPOLYMERS

Philippe Chaumont, La Wantzenau; Jean Herz, Saint-Pierre, and Christian Prud'Homme, Lyons, all of France, assignors to Rhone-Poulenc Industries, Paris, France

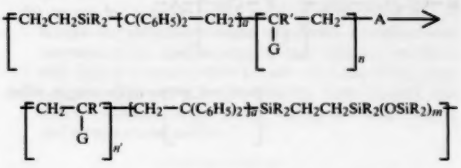
Filed Sep. 11, 1979, Ser. No. 74,477

Claims priority, application France, Sep. 13, 1978, 78 26245

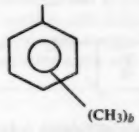
Int. Cl.³ C08F *297/02*; C08G *77/42*

U.S. Cl. 525—106 **9 Claims**

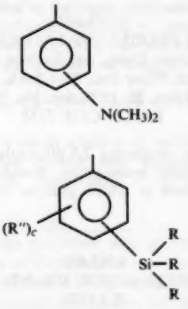
1. A thermoplastic, elastomeric polystyrene/diorganopolysiloxane block copolymer comprising a plurality of recurring units having the structural formula:



wherein each R, which may be the same or different, is selected from the group consisting of methyl, ethyl, n-propyl, phenyl and 3,3,3-trifluoropropyl; each R′, all of which are the same, is hydrogen or methyl; A is a divalent hydrocarbon radical, free of aliphatic unsaturation, having from 6 to 45 carbon atoms; each G, which may be the same or different, is a radical selected from the group consisting of those of the structural formulae:

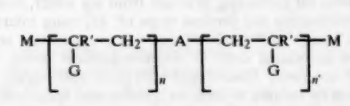


wherein b is 0, 1, 2 or 3,



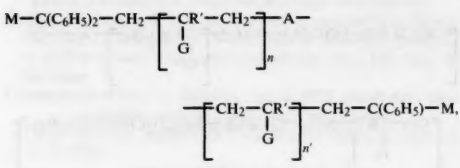
wherein R″ is hydrogen, methyl or —Si R_3, c is 0, 1 or 2 and R is as above defined; each a, all of which are the same, is 0 or 1; and n and n′, which may be the same or different, represent any numbers, the sum of which is between 20 and 500, and m is any number between 1 and 1,500.

8. A process for the preparation of a thermoplastic, elastomeric block copolymer as defined by claim 1, comprising (i) anionically polymerizing a monomer having the formula $C(G)(R')=CH_2$ in the presence of $A(M)_2$ initiator, wherein M is an alkali metal, resulting in a living polymer having the structural formula (F_1):

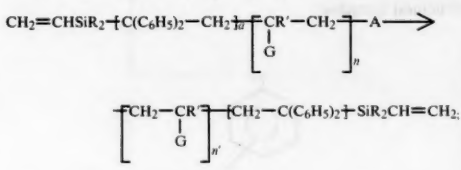


(F_1);

(ii) next reacting a member selected from the group consisting of (ii)(a) the living polymer having the structural formula (F_1) and (ii)(b) a living polymer having the structural formula (F_1'):



prepared by reacting the living polymer having the structural formula (F_1) with $C(C_6H_5)_2{=}CH_2$, in a molar ratio of at least 2 mols of $C(C_6H_5)_2{=}CH_2$ per mol of living polymer (F_1), with $CH_2{=}CH\text{-}R_2SiCl$, in a ratio of at least one mol of such vinylorganochlorosilane per gram-atom of alkali metal, resultin a difunctional polystyrene polymer having the structural mula (F_2):



and (iii) thence hydrosilylating such polymer (F_2) with $HSiR_2{-}(OSiR_2)_mH$, in a ratio of the number of vinyl groups in the polymer (F_2) to the member of SiH groups in such dihydrogenodiorganopolysiloxane of between 0.7 and 1.3.

4,263,402

PROCESS FOR PRODUCING 2,5-DIKETOGLUCONIC

Donald A. Kita, Essex, Conn., and Karlene E. Hall, Brooklyn, N.Y., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 79,668

Int. Cl.³ C12P *7/58*

U.S. Cl. 435—137 **8 Claims**

1. A process for producing 2,5-diketogluconic acid which comprises aerobically propagating *Acetobacter cerinus* in a fermentation medium in which glucose is the main carbon source.

4,263,403

METHOD OF EXTRACTING URANIUM FROM SEA WATER

Manfred Paschke; Klaus Wagener, and Maximilian Wald, all of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 818,580, Jul. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 664,371, Mar. 5, 1976, abandoned. This application Mar. 29, 1979, Ser. No. 24,957

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1975, 2509943

Int. Cl.³ C12N *15/00*

U.S. Cl. 435—172 **9 Claims**

1. A selective method of producing a matrix of cultivatable micro-organisms for extracting uranium from sea water, comprising in combination the process steps of: exposing micro-organisms to x-rays to form irradiated micro-organisms and mutants from individual cells of micro-organisms found in nature which are easily filtered and cultivated and having a ratio of surface to volume as large as possible and specifically micro-organisms that both form colonies and are filamentous, placing the thus irradiated micro-organisms upon a nutrient medium rich in uranium and leaving said micro-organisms thereon until surviving colonies of mutants form, inoculating the surviving colonies of mutants in a nutrient solution, and further cultivating the surviving colonies of mutants to thereby obtain a cell matrix of micro-organisms having stability of micro-organisms compared with uranium as well as capability thereof for taking up uranium, particularly those colonies and filament-forming micro-organisms being selected which are compatible with uranium and capable of taking up uranium.

4,263,404

RIFAMYCIN R AND MICROORGANISMS USEFUL IN THE PRODUCTION OF RIFAMYCINS

Richard J. White, High Wycombe, England; Giancarlo Lancini, Pavia, and Piero Antonini, Arluno, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Division of Ser. No. 601,559, Aug. 4, 1976, Pat. No. 4,042,683. This application Nov. 29, 1976, Ser. No. 745,932

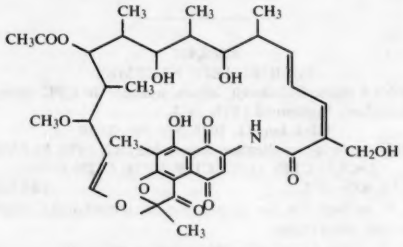
Claims priority, application United Kingdom, Aug. 30, 1974, 37913/74

Int. Cl.³ C07D *491/06;* **A61K** *35/74;* **C12N** *1/20;* **A61K** *31/395*

U.S. Cl. 435—253 **4 Claims**

1. A biologically pure culture of the microorganism *Nocardia mediterranea,* having the identifying characteristics of ATCC 31064, said culture being capable of producing an antibiotic selected from the group consisting of rifamycin P, Q, R, and U in a recoverable quantity upon aerobic fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen, and inorganic minerals.

4. A rifamycin compound defined as rifamycin R having the following formula:



4,263,405

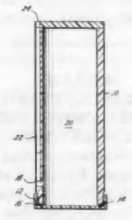
APPARATUS FOR MEASURING THE APPROXIMATE NUMBER OF AEROBIC BACTERIA IN WATER AND OTHER FLUIDS

Joseph L. Melnick, and Craig Wallis, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Continuation-in-part of Ser. No. 959,115, Nov. 9, 1978, which is a continuation-in-part of Ser. No. 776,323, Mar. 10, 1977, abandoned. This application Jul. 13, 1979, Ser. No. 57,237

Int. Cl.³ C12M *1/34*

U.S. Cl. 435—291 **6 Claims**



1. Apparatus for measuring bacteria in a test fluid, comprising:

a closed vessel having a bottom, a top and an opening adjacent said top, said vessel including an indicia for test fluid

level located to provide a test fluid level in the vessel of from 60% to 90% of the volume of the vessel measured from the bottom thereof;

a manometer in fluid communication with the vessel interior adjacent the top thereof and above the indicia of test fluid level and positioned to provide a pressure measurement by test fluid from the vessel when the vessel is in an inverted position; indicia for test fluid level in the manometer which includes a base level and levels above the base level corresponding to amounts of bacteria in a test fluid; and

an adjustable closure means for closing the opening in the vessel and for adjusting test fluid level in the manometer to the base level prior to pressure measurement for bacteria determination, whereby upon addition of test fluid and reagents and inversion of the vessel, bacteria are measured by the change of level of fluid in the manometer resulting from fluid compression caused by gas release.

4,263,406

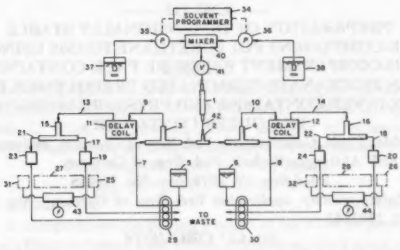
APPARATUS FOR CONTINUOUSLY REFERENCED ANALYSIS OF REACTIVE COMPONENTS IN SOLUTION

William D. Bostick; Mark S. Denton, both of Oak Ridge, and Stanley R. Dinsmore, Norris, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 31, 1979, Ser. No. 62,375

Int. Cl.³ C12M *1/34*

U.S. Cl. 435—291 **9 Claims**



1. An apparatus for measuring the concentration of an active chemical species in solution comprising in combination:

(a) conduit means for conducting a chromotographic separation effluent containing an active chemical species from a source of said effluent;

(b) means for introducing enzymatic substrates and co-factors into said effluent;

(c) a reaction zone disposed in fluid communication with said conduit means in which a first chemical reaction occurs involving said active species, enzymatic substrates, and co-factors to produce an intermediate species;

(d) a stream separator disposed within said conduit means for separating said effluent containing an active and intermediate species into a sample stream and a reference stream, said stream separator being located downstream from said means for introducing;

(e) an enzymatic reactor with activator enzymes immobilized on a support disposed in fluid communication with said sample stream only, in which a second chemical reaction occurs between said intermediate and active chemical species and said activator enzymes to cause the consumption or production of an indicator species in said sample stream, in a concentration correlatable to the concentration of said active species;

(f) measurement means selected from the group consisting of photometric, amperometric and enthalpimetric devices, disposed in communication with said sample and reference streams, said means being sensitive to the concentration of said indicator species and thereby providing a measurement output for each of said sample and reference streams;

(g) means for comparing the measurement output of said sample and reference streams to provide a blanked measurement of the concentration of said indicator species in said sample stream relative to said reference stream; and

(h) a peristaltic pump for evacuating flow through said conduit means, reaction zone, stream separator, reactor, and measurement means.

4,263,407

POLYMERIC ADSORBENTS FROM MACRORETICULAR POLYMER BEADS

Samuel F. Reed, Jr., Holland, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 927,221, Jul. 24, 1978, abandoned. This application Mar. 12, 1980, Ser. No. 129,772

Int. Cl.³ B01J *1/22;* C08F *212/36;* C08J *3/24*

U.S. Cl. 521—33 **25 Claims**

1. A polymeric adsorbent of the macronet type, comprising lightly crosslinked macroreticular aromatic copolymer beads post-crosslinked in a swollen state in the present of a Friedel-Crafts catalyst with a crosslinker selected from a polyfunctional alkylating or acylating agent and a sulfur halide.

4,263,408

PROCESS FOR THE PRODUCTION OF MOLDED FOAMS

Holger Meyborg, Odenthal; Werner Mormann, Leverkusen; Gerhard Grögler, Leverkusen, and Jürgen Schwindt, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,935

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832253

Int. Cl.³ C08G *18/14, 18/22*

U.S. Cl. 521—51 **11 Claims**

1. In a process for the production of molded foams having a compact surface and cellular core and an integral density distribution over the cross-section of the body, comprising reacting

(A) polyisocyanates, and

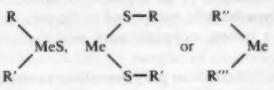
(B) relatively high molecular and/or low molecular compounds having an average of at least two isocyanate-reactive hydrogen atoms in the presence of:

(C) a catalytic amount of a catalyst for the isocyanate polyaddition reaction and

(D) blowing agents and optionally other known additives, in a closed mold under the conditions of foaming inside mold, the improvement wherein said polyisocyanates are aliphatic and/or alicyclic polyisocyanates and said catalyst is a catalyst combination of:

(i) an alkali metal and/or alkaline earth metal hydroxide and

(ii) a sulfur compound of the formula



or mixtures thereof wherein

Me represents tin or lead and

R, R', R'' and R''', which may be the same or different, represent a straight or branched chain alkyl group having from 1 to 20 carbon atoms or a cycloalkyl group having from 6 to 15 carbon atoms optionally substituted by C_1–C_4 alkyl groups or a phenyl group optionally substituted by C_1–C_6 alkyl groups.

4,263,409

PROCESS FOR THE PRODUCTION OF A FOAMED THERMOPLASTIC COMPOSITION

Frank N. Liberti, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 494,039, Aug. 2, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,144, Jul. 18, 1973, abandoned. This application Feb. 12, 1979, Ser. No. 11,540

Int. Cl.[3] C08J *9/06*

U.S. Cl. 521—81 14 Claims

1. A process for the production of an injection moldable foamed thermoplastic composition which consists essentially of blending from about 0.10 to about 5.0 weight percent based on the weight of resin of a chemical foaming agent containing a decomposable group selected from azo, N-nitroso, carboxylate, carbonate, heterocyclic nitrogen containing and sulfonyl hydrazide groups with a thermoplastic resin selected from the group consisting of an aromatic polycarbonate; a saturated polyester, a polyphenylene ether and a mixture thereof with a polystyrene resin, extruding at an elevated constant temperature below the decomposition temperature of said resin and comminuting the resultant extrudate into pellets or molding granules.

4,263,410

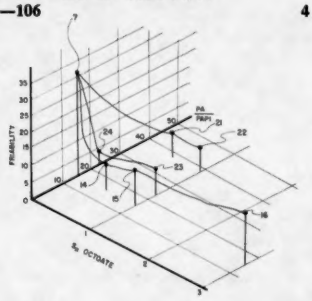
AMBIENT CURE POLYIMIDE FOAM

Chiang-Ying M. Tung, Thousand Oaks, and Charles L. Hamermesh, Westlake Village, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 19, 1980, Ser. No. 122,084

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—106 4 Claims



1. An improvement in a process for preparing a fire-resistant foam by the reaction of an aromatic polyisocyanate and an aromatic polycarboxylic compound in the presence of furfuryl alcohol and a strong inorganic acid, said improvement comprising:

selecting polymethylene polyphenylisocyanate (PAPI) from said aromatic polyisocyanates;

selecting benzophenone-3,3',4,4'-tetracarboxylic acid dianhydride (BTDA) from said aromatic polycarboxylic compounds;

selecting phosphoric acid (PA) from said strong inorganic acids; and

carrying out said reaction using a ratio of said phosphoric acid to said polymethylene polyphenylisocyanate (PA/-PAPI) of approximately 20 to 26% by weight.

4,263,411

POLYURETHANE COMPOSITIONS AND PROCESS FOR PREPARING POLYURETHANE EMITTING REDUCED AMOUNTS OF TOXIC FUMES ON BURNING USING A COBALT, COPPER, NICKEL OR MANGANESE SALT

Eugene Bak, Polk, Pa., assignor to Mooney Chemicals, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 955,899, Oct. 30, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 77,921

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—108 30 Claims

1. In the process of forming polyurethane compositions comprising reacting a mixture consisting essentially of an organic compound having two or more active hydrogen atoms, an organic polyfunctional isocyanate and a catalyst selected from the group consisting of tertiary phosphines, alkali and alkaline earth metal hydroxides, alkoxides and phenoxides, acidic metal salts of strong inorganic acids, metal alcoholates and phenolates, organometallic derivatives of trivalent and pentavalent arsenic, antimony and bismuth, metal carbonyls of iron and cobalt, one or more organic tertiary amines, and alkali or alkaline earth metal salts of aliphatic and alicyclic monocarboxylic acids, the improvement comprising the addition to said mixture prior to reaction, of a cobalt, copper, nickel or manganese salt of an aliphatic or alicyclic monocarboxylic acid containing from about 6 to 20 carbon atoms and free of other functional groups, or mixtures thereof in an amount effective to reduce the emission of toxic substances when the polyurethane composition is ignited.

4,263,412

PREPARATION OF DIMENSIONALLY STABLE ONE-COMPONENT POLYURETHANE FOAMS USING A TWO-COMPARTMENT PRESSURE PACK CONTAINING AN ISOCYANATE-TERMINATED PREPOLYMER IN THE INNER CONTAINER AND PRESSURE MEDIUM IN THE OUTER CONTAINER

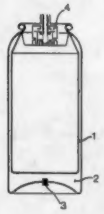
Mathias Pauls, Geiselbullach, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,415

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842242

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—114 8 Claims



1. A process for the preparation of a dimensionally stable one-component polyurethane foam from a storagestable mixture, under pressure, of a prepolymer which is the reaction product of polyols and organic polyisocyanates and containing isocyanate groups, and a blowing agent, with or without additives, by releasing the pressure and allowing the mixture to cure by interaction with the atmosphere, wherein a foamable mixture of a prepolymer containing isocyanate groups and a blowing agent, with or without additives, which contains from 0.1 to 15% by weight, based on the weight of the prepolymer containing isocyanate groups, of a blowing agent, which mixture is introduced into the inner container of a two-compartment pressure pack which contains a pressure medium in the outer container, and is discharged, when required, via a dispensing device.

4,263,413

HALF ESTERS OF ORGANIC POLYOLS AND A PROCESS FOR THEIR PRODUCTION

Hugh C. Gardner, Somerville, and Robert J. Cotter, Bernardsville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

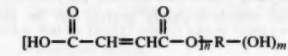
Continuation-in-part of Ser. No. 34,995, May 1, 1979, abandoned. This application Mar. 27, 1980, Ser. No. 129,884

Int. Cl.[3] C08G *63/76*

U.S. Cl. 525—34 30 Claims

1. A composition comprising a homogeneous liquid mixture of:

(a) a half ester of an organic polyol characterized by the following empirical formula:



(I)

wherein n is a number having an average value of about 1.8 to less than about 4, m is equal to the free valence of R less the average value of n, R is the hydroxyl-free residue of an organic polyol which contained from 2 to 4, inclusive, hydroxyl groups, OH, in formula (I),

(b) maleic anhydride,

(c) an ethylenically unsaturated monomer which forms a liquid homogeneous mixture with and is copolymerizable with (a) and (b), and

(d) a basic compound.

4,263,414

VULCANIZABLE BLEND OF BROMINE-CONTAINING FLUOROPOLYMER AND FLUOROSILICONE GUMS

Arthur C. West, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 30, 1979, Ser. No. 70,926

Int. Cl.[3] C08L *27/20, 83/08*

U.S. Cl. 525—102 12 Claims

1. A composition comprising a blend of (a) 90 to 20 parts by weight fluoropolymer gum whose interpolymerized units consist essentially of 60 to 85 mol percent of units derived from vinylidene fluoride, 10 to 40 mol percent of units derived from hexafluoropropene, and 0.15 to 3 mol percent of units derived from bromine-containing copolymerizable olefin, and (b) 10 to 80 parts by weight fluorosilicone gum, said parts by weight being based on 100 parts by weight of the sum of the weights of said gums, both of which gums cure in the presence of free-radical initiators under vulcanization conditions to produce an elastomeric vulcanizate.

4,263,415

POLYCARBONATE COMPOSITIONS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 27, 1979, Ser. No. 69,822

Int. Cl.[3] C08L *69/00*

U.S. Cl. 525—148 8 Claims

1. A ternary polycarbonate composition comprising in admixture a high molecular weight aromatic polycarbonate which is based on a dihydric phenol, from about 2 to about 6 parts by weight per hundred parts of said aromatic polycarbonate of an acrylate copolymer, which is a copolymer of C_1–C_5 acrylate and a C_1–C_5 methacrylate, and from about 0.5 to about 4 parts by weight per hundred parts of said aromatic polycarbonate of a butadiene-styrene copolymer.

4,263,416

POLYCARBONATE COMPOSITIONS

Ping Y. Liu, Naperville, Ill., and Edwin J. Goedde, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 27, 1979, Ser. No. 69,824

Int. Cl.[3] C08L *69/00*

U.S. Cl. 525—148 9 Claims

1. A ternary polycarbonate composition comprising in admixture, a high molecular weight aromatic polycarbonate which is based on a dihydric phenol, an acrylate copolymer, which is a copolymer of a C_1–C_5 acrylate and a C_1–C_5 methacrylate in an amount of about 2 to about 5 parts by weight per hundred parts of aromatic polycarbonate, and a minor amount of an organic silicone compound.

4,263,417

POLYESTER COMPOSITIONS CONTAINING CROSSLINKABLE COPOLYMERS

Christopher J. Dyball, Amherst, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 3, 1979, Ser. No. 63,232

Int. Cl.[3] C08L *67/06*

U.S. Cl. 525—169 10 Claims

1. A liquid polymerizable composition consisting essentially of a polymerizable resin consisting of an ethylenically unsaturated polyester, prepared by esterifying ethylenically unsaturated di- or poly-carboxylic acids, their anhydrides, or their acid halides with saturated or unsaturated di- or polyalcohols, and dissolved in 20 to 50 weight percent of a free radically polymerizable monomer or monomers; and

2 to 75 weight percent based on said polymerizable resin of a copolymer having a molecular weight of 1,000 to 100,000 prepared by free radically polymerizing:

(i) at least one member selected from allyl ester, substituted allyl ester, N-allyl substituted amide, N-N-diallyl substituted amide of an alpha-beta unsaturated carboxylic or di-carboxylic acid, or an allyl substituted monovinyl aromatic compounds; with

(ii) at least one vinyl or vinylidene monomer.

4,263,418

GRAFT COPOLYMERS CONTAINING ALLYL COMPOUNDS

Ulrich Steffen, Leverkusen; Heinrich Alberts, Cologne, and Richard Prinz, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 18,112, Mar. 7, 1979, abandoned. This application Oct. 26, 1979, Ser. No. 88,528

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810633

Int. Cl.[3] C08F *263/04*

U.S. Cl. 525—277 5 Claims

1. A graft copolymer which consists of:

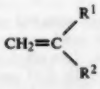
(A) as graft base, from 10 to 80% by weight, of an ethylene/vinyl ester copolymer containing from 1 to 75%, by weight, of vinyl ester; and

(B) as graft monomer, from 90 to 20%, by weight, of a mixture consisting of:

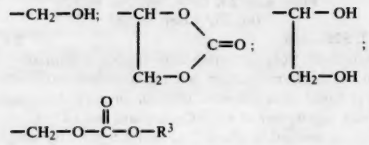
(I) from 5 to 50%, by weight, of at least one member selected from the group consisting of acrylonitrile, methacrylonitrile, and mixtures thereof;

(II) from 94.99 to 49.5%, by weight, of an aromatic monovinyl compound; and

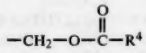
(III) from 0.01 to 0.5%, by weight, of an allyl compound of the formula:



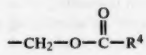
wherein
R^2 represents hydrogen; and
R^1 represents



wherein
R^3 represents C_1–C_8 alkyl or $-CH_2-CH=CH_2$; or



wherein
R^4 represents C_1–C_8 alkyl;
or R^1 and R^2 both represent $-CH_2-OH$;
or R^1 and R^2 both represent



wherein
R^4 represents C_1–C_8 alkyl.

4,263,419

ADHESIVE COMPOSITION

Gerhard Piestert, Schriesheim, and Heinz G. Gilch, Bad Homburg-Kirdorf, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Oct. 11, 1979, Ser. No. 83,676

Claims priority, application United Kingdom, Jun. 11, 1978, 43368/78

Int. Cl.[3] **C08L** *23/00*

U.S. Cl. 525—305 **18 Claims**

1. A composition which can be combined with an activator to form an adhesive and which comprises a homogeneous solution in vinyl monomer material which is polymerizable to a solid by free radicals of:

(a) not less than about 20% by weight of the composition of a sulfur-bearing composition selected from chlorosulfonated polyethylene or a mixture of sulfonyl chloride and chlorinated polyethylene and,

(b) not less than 5% by weight of the composition of a compatible polyunsaturated monomeric material having three or more ethylenically unsaturated double bonds in its molecular chain.

4,263,420

PROCESS FOR PREPARING STYRENIC RESINS

William J. I. Bracke, Hamme, Belgium, assignor to Labofina, S. A., Brussels, Belgium

Continuation-in-part of Ser. No. 916,576, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 890,211, Mar. 27, 1978, abandoned. This application Mar. 28, 1979, Ser. No. 24,837

Int. Cl.[3] **C08F** *257/02*

U.S. Cl. 525—309 **36 Claims**

1. A process for preparing a substantially gel-free, rubbery polymer-reinforced styrenic resin, which comprises the steps of:

(a) adding a monomer material selected from the group consisting of acrylic acid esters, mixtures of acrylic acid esters, and mixtures of an alkyl ester of methacrylic acid with at least one acrylic acid ester to an aqueous suspension comprising a suspending agent, a surface-active agent, and beads of a rigid polymeric matrix substantially free of reactive sites comprising a polymer of a styrenic compound;

(b) contacting the polymeric matrix and the monomer material under agitation conditions in which said monomer is absorbed by the polymeric matrix, whereby there is formed an aqueous suspension of styrenic polymer beads having said monomer material substantially uniformly distributed therein;

(c) subjecting said suspension formed in step (b) to suspension polymerization at a temperature ranging between about 50° and about 150° C. in the presence of a free radical generating catalyst to polymerize said monomer material within said beads, whereby there is formed a styrenic polymer reinforced by said polymerized monomer material which is partly grafted on the polymeric matrix.

4,263,421

PROCESS FOR COATING REACTORS USING ORGANIC COMPOUND VAPOR APPLICATION

Richard A. Jones, Avon Lake, and Donald E. Witenhafer, North Olmsted, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 14, 1979, Ser. No. 75,552

Int. Cl.[3] **B01J** *19/00, 12/02;* **B08B** *17/00*

U.S. Cl. 526—62 **17 Claims**

1. A process for substantially eliminating the buildup of polymer on the internal surfaces of a polymerization reaction vessel for polymerizing olefinic monomer(s) which comprises, making a coating solution of a coating material which, in the form of a film, is capable of resisting polymer buildup thereon, applying said coating material to said surfaces by means of vinyl chloride gas, said vinyl chloride gas acting as a carrier for said coating material, and thereafter conducting the polymerization of said monomer(s) while in constant contact with the coated internal surfaces of said vessel.

4,263,422

POLYMERIZATION OF OLEFINS WITH DUAL, INDEPENDENTLY SUPPORTED CATALYSTS

Kirby Lowery, Jr., and Fred L. Vance, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 31, 1979, Ser. No. 108,721

Int. Cl.[3] **C08F** *4/02, 4/78*

U.S. Cl. 526—97 **24 Claims**

1. In a process for polymerizing one or more α-olefins in the presence of catalytic quantities of a catalyst under conditions appropriate to cause polymerization of said olefins; the improvement which comprises conducting the polymerization in the presence of catalytic quantities of at least two independently supported catalytically active catalysts, one of which is an inorganic halide supported Ziegler type catalyst containing titanium, vanadium or mixture thereof and another of which is an inorganic oxide supported chromium-containing catalyst; said independently supported catalysts being employed in quantities so as to provide a value of Xn in the equation $Xn=1-Xm$ of from about 0.001 to about 0.999 wherein Xn and Xm are the fractional percent polymer yields contributed by the inorganic halide supported catalyst and the inorganic oxide supported catalyst respectively.

4,263,423
PROCESS FOR THE PREPARATION OF POLYURETHANE CASTING ELASTOMERS

Jürgen Schwindt, Leverkusen; Holger Meyborg, Odenthal; Gerhard Grögler, Leverkusen, and Klaus Recker, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,936

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832315

Int. Cl.³ C08G *18/22, 18/24, 18/26, 18/16*

U.S. Cl. 528—55 **6 Claims**

1. In a process for the production of a light fast, transparent polyurethane elastomer comprising reacting:

(A) from 90 to 50% by weight, based on the polyurethane solids content, of a compound having a molecular weight of from 400 to 10,000 which has at least two Zerewitinoff active hydrogen atoms;

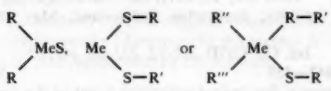
(B) from 50 to 10% by weight, based on the polyurethane solids content, of an aliphatic and/or alicyclic polyisocyanate; and

(C) from 0 to 20% by weight, based on the polyurethane solids content, of a chain-lengthening agent having a molecular weight of from 60 to 400; in the presence of:

(D) catalysts for the isocyanate polyaddition reaction, the improvement wherein said catalysts, component (D), is a catalyst combination of:

(a) an alkali metal hydroxide and/or alkaline earth metal hydroxide, and

(b) a sulfur-containing organometallic compound corresponding to the formula:



wherein

Me represents tin or lead;

R,R',R'', and R''' which may be the same or different, each represents a straight- or branched chain alkyl group having from 1 to 20 carbon atoms or a cycloalkyl group having from 6 to 15 carbon atoms optionally substituted by C_1–C_4 alkyl groups or a phenyl group optionally substituted by C_1–C_4 alkyl groups or by halogen.

4,263,424
ANTI-FUNGAL AND ANTI-BACTERIAL POLYURETHANES

Alan J. Buckley; Michael Singer, and James H. Wild, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

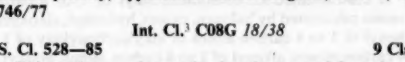
Filed Oct. 26, 1978, Ser. No. 954,919

Claims priority, application United Kingdom, Nov. 3, 1977, 45746/77

Int. Cl.³ C08G *18/38*

U.S. Cl. 528—85 **9 Claims**

1. Polyurethane polymers having the general formula:



wherein each Y is an —NH— group, Z is an optionally substituted divalent hydrocarbon radical and n is an integer of at least 2.

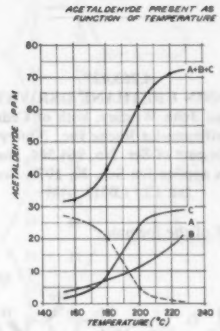
4,263,425
PROCESS FOR PRODUCTION OF POLYESTER POLYMER FOR FOOD PACKING

Hans-Jochen Rothe; Peter Freund, both of Maintal; Werner Gey, Offenbach am Main, and Helmut Heinze, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Zimmer Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 823,282, Aug. 10, 1977, abandoned. This application Nov. 8, 1978, Ser. No. 958,677

Int. Cl.³ C08G *63/74*

U.S. Cl. 528—309 **3 Claims**



1. In a process for the production of polyethylene terephthalate plastic for the packing or bottling of food products for human consumption wherein there is direct contact between the food and the plastic and as a result, the presence of acetaldehyde in the product is undesirable, the improvement which comprises heating polyethylene terephthalate chips containing acetaldehyde and in a solid state having an initial intrinsic viscosity in the range of 0.5–0.85 when measured at 25° C. with 0.5 g polyethylene terephthalate per 100 ml of solvent of 60% phenol and 40% tetrachloroethane, a density in the range of 1.378–1.400, a concentration of ester interchange catalyst in the chip of less than 25 ppm and a phosphorous concentration of less than 20 ppm at a temperature of about 180°–230° C. in an inert atmosphere for about 4–12 hours to reduce the acetaldehyde content to below 2.5 ppm in the chips.

4,263,426
PROCESS FOR ISOLATION OF POLYPHENYLENE ETHER RESIN BY CRUMBING IN HOT WATER

Glenn D. Cooper, Delmar, and Daniel E. Floryan, Glenmont, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 6, 1978, Ser. No. 957,802

Int. Cl.³ C08G *65/44, 65/46*

U.S. Cl. 528—486 **22 Claims**

1. In a process for forming a polyphenylene ether by an oxidative coupling reaction in the presence of a metal-amine complex catalyst comprising passing an oxygen-containing gas through a reaction solution of a phenol and said metal-amine catalyst in a steam-distillable reaction solvent, said reaction solution being capable of liquid-liquid extraction with an aqueous solution, and terminating the reaction and separating the metal-amine catalyst residue from the reaction solution and then recovering the polyphenylene ether, the improvement which comprises:

(a) removing the catalyst from the reaction solution;

(b) heating the reaction solution sufficiently in the presence of an intrinsic viscosity stabilizer comprising a dihydric phenol and a mild reducing agent selected from the group of sulfur dioxide, sulfurous acid, sodium bisulfite, sodium thionite, tin (II) chloride, iron (II) sulfate, chromium (II)

sulfate, titanium (III) chloride, hydroxylamines and their salts and diethyl phosphite; and

(c) adding the reaction solution into vigorously agitated hot water to produce a dispersion of fine droplets of the reaction solution in the hot water, continuing the vigorous agitation until the solvent in the droplets has been substantially completely steam-distilled off leaving solvent-free particles of said polyphenylene ether suspended in the hot water, and thereafter collecting the polyphenylene ether in the form of a friable crumb.

4,263,427

MONENSIN URETHANE DERIVATIVES

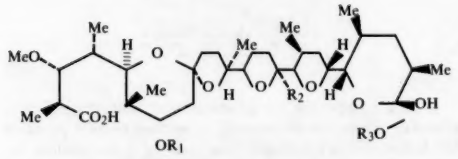
Chao-Min Liu, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 964,564, Nov. 29, 1978, abandoned. This application Sep. 20, 1979, Ser. No. 77,415

Int. Cl.[3] **C07H** *3/08*

U.S. Cl. 536—1 **5 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, wherein R_4 is alkyl, phenyl, pyridyl, furyl, 4-alkylphenyl, 4-halophenyl, 4-nitrophenyl, 4-phenoxyphenyl, 4-alkoxyphenyl, 4-alkylcarbonylphenyl, 4-phenylcarbonylphenyl, phenyl, furyl or pyridyl subtituted lower alkyl, 4-halophenylalkyl, 2-phenylcycloalkyl, acetyl, propionyl or butyryl substituted phenyl, pyridyl or furyl cycloalkyl; R_2 is methyl or ethyl and R_3 is —$CONHR_4$ and their pharmaceutically acceptable salts.

4,263,428

BIS-ANTHRACYCLINE NUCLEIC ACID FUNCTION INHIBITORS AND IMPROVED METHOD FOR ADMINISTERING THE SAME

Martin A. Apple, Daly City; C. Anthony Hunt, San Francisco, both of Calif., and Hiroaki Yanagisawa, Tokyo, Japan, assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 889,853, Mar. 24, 1978, abandoned. This application Feb. 23, 1979, Ser. No. 13,433

Int. Cl.[3] **C07H** *17/08;* **A61K** *31/70*

U.S. Cl. 536—17 A **22 Claims**

1. As compositions of matter, bis-anthracycline compounds wherein two anthracycline moieties are linked through their respective C-13 carbon atoms by a cross-linking substituent, said cross-linking substituent being hydroxy-dicarboxylic acid hydrazones or amino-dicarboxylic acid hydrazones.

11. A method of producing bis-anthracycline compounds comprising reacting anthracyclines in a solvent medium with a cross-linking agent in the presence of an acid at slightly elevated temperatures, said cross-linking agent being hydroxy-dicarboxylic acid dihydrizades or amino-dicarboxylic acid dihydrizides, for a period of time sufficient to produce the bis-anthracycline compounds, and recovering the bis-anthracycline compounds from the reactant solution.

4,263,429

1,2,6-TRI-N-BENZYLOXYCARBONYLFORTIMICIN B-4,5-CARBAMATE AND 1,2,6-TRI-N-ACETYLFORTIMICIN B-4,5-CARBAMATE

John S. Tadanier, and Jerry R. Martin, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,137

Int. Cl.[3] **C07H** *15/22*

U.S. Cl. 536—17 R **3 Claims**

1. A fortimicin intermediate selected from the group consisting of 1,2',6'-tri-N-benzyloxycarbonylfortimicin B-4,5-carbamate and 1,2',6'-tri-N-acetylfortimicin B-4,5-carbamate.

4,263,430

2-METHYL-5-(2-HYDROXYSTYRYL)-1,3,4-THIADIAZOLE

Helmut Hagen, Frankenthal; Peter C. Thieme, and Albrecht Franke, both of Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,886

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818766

Int. Cl.[3] **C07D** *285/12;* **A61K** *31/424*

U.S. Cl. 542—458 **1 Claim**

1. 2-Methyl-5-(2-hydroxystyryl)-1,3,4-thiadiazole.

4,263,431

CATIONIC FLUORESCENT WHITENING AGENTS

Kurt Weber; Christian Lüthi, both of Basel, and Hans R. Meyer, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

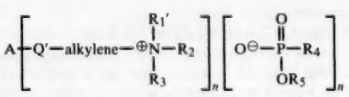
Filed May 17, 1979, Ser. No. 39,722

Claims priority, application Switzerland, May 29, 1978, 5844/78

Int. Cl.[3] **C07D** *207/12, 231/06, 401/02*

U.S. Cl. 542—459 **9 Claims**

1. A cationic fluorescent whitening agent of the formula



wherein

A is a radical selected from the group consisting of 1,3-diarylpyrazolines, 4,4'-distyrylbiphenyls or naphthalimides,

Q' is —SO_2—alkyleneoxy containing 2 to 4 carbon atoms, —SO_2— alkylene—COO—containing 2 to 4 carbon atoms, —SO_2, —COO—, —SO_2—alkylene —CON(R_6)—containing 2 to 4 carbon atoms in the alkylene moiety, —$SO_2N(R_6)$— or —$CON(R_6)$—, wherein R_6 is hydrogen, unsubstituted or substituted alkyl of 1 to 5 carbon atoms substituted by cyano, carbamoyl, carboxyl, carbalkoxy, hydroxyl, halogen or alkoxy of 1 to 4 carbon atoms, or together with R_1' forms a piperazine radical,

bridging member alkylene is a bivalent straight or branched alkylene of 2 to 20 carbon atoms,

R_1' is unsubstituted or substituted alkyl of 1 to 6 carbon atoms substituted by halogen, cyano, hydroxyl, alkoxycarbonyl of 1 to 4 carbon atoms or alkylcarbonyloxy of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, aralkyl or aralkyl substituted on the benzene ring by halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, or together with R_6 forms a piperazine radical or together with R_2 forms a heterocyclic ring selected from the group consisting of piperidine, pyrrolidine or morpholine, or said heterocycles substituted by alkyl groups of 1 to 4 carbon atoms,

R_2 is unsubstituted or substituted alkyl of 1 to 6 carbon atoms substituted by halogen, cyano, hydroxyl, alkoxycarbonyl

of 1 to 4 carbon atoms or alkylcarbonyloxy of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, aralkyl or aralkyl substituted on the benzene ring by halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, or together with R_1' forms a heterocyclic ring selected from the group consisting of piperidine, pyrrolidine or morpholine or said hetercycles substituted by alkyl group of 1 to 4 carbon atoms,

R_3 is alkyl of 1 to 4 carbon atoms,

R_4 is hydrogen, unsustituted or substituted alkyl of 1 to 4 carbon atoms substituted by hydroxyl, cyano, alkylcarbonyloxy or alkoxycarbonyl each containing 1 to 4 carbon atoms in the alkyl moiety,

R_5 is alkyl of 1 to 4 carbon atoms, and

n is 1 or 2.

4,263,432

7α-METHOXY-7β-(1,3-DITHIETANE-2-CARBOXAMIDO)-CEPHALOSPORANIC ACID DERIVATIVES

Masaru Iwanami, Yokohama; Tetsuya Maeda, Urawa; Yoshinobu Nagano, Niiza; Masaharu Fujimoto, Tokyo; Noriaki Nagano, Ageo, and Atsuki Yamazaki, Ichikawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

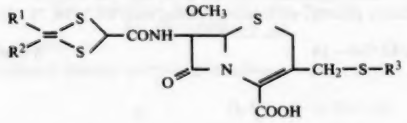
Filed Jun. 7, 1978, Ser. No. 913,500

Claims priority, application Japan, Jun. 10, 1977, 52-68699; Jul. 28, 1977, 52-90772; Feb. 2, 1978, 53-10772

Int. Cl.³ C07D *501/18*

U.S. Cl. 544—21 **9 Claims**

1. A 7α-Methoxy-7β-(4-substituted methylene-1,3-dithietane-2-yl) carboxamido-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the formula



wherein R^1 represents a carboxyl group or a derivative thereof selected from the group consisting of lower alkyl, phenyl lower alkyl and naphthyl lower alkyl esters of said carboxyl group and carbamoyl, carbazoyl, and cyano groups; R^2 represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl group and n represents 0, 1 or 2, a lower alkanoyl group, a phenyl group, a naphthyl group, a benzoyl group, a naphthoyl group, a R^1 group, a lower alkenyl group, a sulfamoyl group, a pyridyl group or a thiadiazolyl group; and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group and the pharmaceutically acceptable salts thereof.

4,263,433

TERTIARY AMINO-SUBSTITUTED THIAZINES

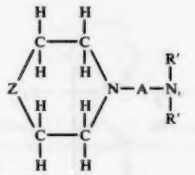
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 12, 1976, Ser. No. 713,706

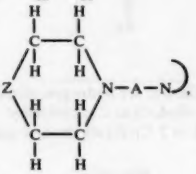
Int. Cl.³ C07D *279/10, 417/06, 417/12, 417/14*

U.S. Cl. 544—58.2 **9 Claims**

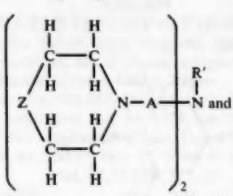
1. A tertiary amino-substituted thiazine having the formula selected from the group consisting of



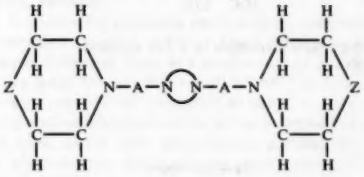
(1)



(2)



(3)



(4)

where Z is SO or SO_2, A is alkylene having 2 to 10 carbon atoms, R' is alkyl or hydroxyalkyl,

represents a cyclic amine group and

represents a cyclic diamine group.

4,263,434

PIPERIDYL-TRIAZINE DERIVATIVES

Paolo Cassandrini, Bologna, and Antonio Tozzi, Sasso Marconi, both of Italy, assignors to Chimosa Chimica Organica S.p.A., Pontecchio Marconi, Italy

Division of Ser. No. 699,163, Jun. 23, 1976, Pat. No. 4,108,829. This application Apr. 28, 1978, Ser. No. 901,242

Claims priority, application Italy, Dec. 18, 1975, 52769 A/75

Int. Cl.³ C07D *401/14*

U.S. Cl. 544—198 **9 Claims**

1. A compound having the formula

4,263,435

6-[2-HYDROXY-4-(1,2,3-TRIAZOL-2-YL)-PHENYL]-2,4-DIOXO-1,3,5-TRIMETHYL-HEXAHYDRO-S-TRIAZINES AND THEIR PREPARATION

Florin Seng, Bergisch Gladbach; Alfons Dorlars, Leverkusen, and Carl-Wolfgang Schellhammer, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

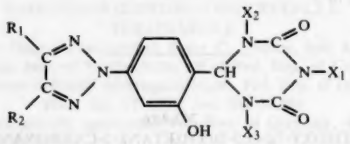
Filed Oct. 22, 1979, Ser. No. 87,194

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848670

Int. Cl.[3] **C07D** *251/10, 249/06*

U.S. Cl. 544—223 **4 Claims**

1. A triazolylphenyltriazine of the formula



wherein

R_1 and R_2 each independently is C_1–C_4-alkyl, phenyl or phenyl substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

X_1, X_2 and X_3 each independently is C_1–C_4-alkyl, cycloalkyl or C_1–C_4-alkylphenyl optionally substituted on the phenyl by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy.

4,263,436

POLYETHYLENE SILICON COMPOUNDS

Michel Bargain, Lyons, and Marcel Lefort, Caluire, both of France, assignors to Rhone-Poulenc Industries, Paris, France

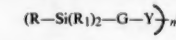
Division of Ser. No. 817,341, Jul. 20, 1977, Pat. No. 4,208,342. This application Sep. 18, 1978, Ser. No. 943,394

Claims priority, application France, Aug. 17, 1976, 76 25535

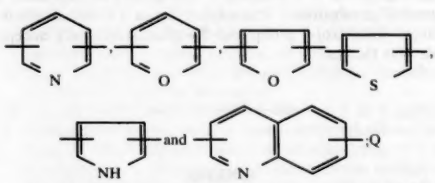
Int. Cl.[3] **C07D** *213/56*

U.S. Cl. 546—14 **6 Claims**

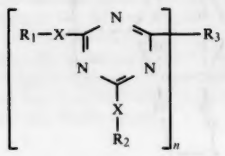
1. Organosilicon compounds having the general formula:



wherein, R represents a monovalent aliphatic hydrocarbon or halocarbon radical containing up to 10 carbon atoms and including a carbon-carbon double bond; R_1 represents a member selected from the group consisting of a monovalent linear or branched alkyl radical containing up to 10 carbon atoms, cycloalkyl radicals having 3 to 6 carbon atoms in the ring, aryl radicals, and the halo and cyano derivatives thereof; G represents a divalent carbocyclic aromatic radical or a heterocyclic radical selected from the group consisting of



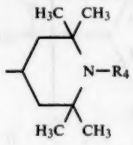
represents a radical of valence n selected from the group consisting of aliphatic and cycloaliphatic radicals containing up to 13 carbon atoms, carbocyclic aromatic radicals, and one of the above-enumerated heterocyclic radicals, with the proviso that at least one of G and Q is heterocyclic; Y represents a group selected from the group consisting of CONH and COO; and, n is an integer equal to 2 or 3.



(I)

wherein:

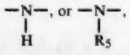
R_1, R_2 same or different, are hydrogen, straight or branched chain C_1 to C_{10} alkyl, C_5 to C_{10} cycloalkyl, phenyl, phenyl substituted by 1 to 3 C_1–C_4 alkyls, or a piperidine radical of formula (II)



(II)

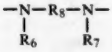
in which R_4 is hydrogen or C_1 to C_4 alkyl;

X is —O—,



wherein R_5 is a C_1 to C_{10} alkyl, a C_5 to C_{10} cycloalkyl, or piperidine radical of formula (II);

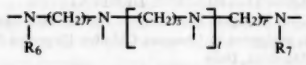
n is an integer from 2 to 6; and when n is 2, R_3 is a radical of formula (III)



(III)

wherein R_6, R_7, same or different, are hydrogen, C_1 to C_{10} alkyl, C_5 to C_{10} cycloalkyl, or a radical of formula (II), R_8 being a C_2 to C_{10} alkylene, a C_6 to C_{10} cycloalkylene, a C_6 to C_{10} arylene or xylene, or R_3 is a 1,4-piperazinyl radical;

when n is 3 to 6, R_3 is a radical of formula (IV)



(IV)

wherein R_6, R_7 are as above indicated, r, s, same or different, are an integer from 2 to 6 and t is 0 to 3;

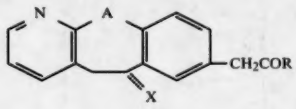
in the formula (I) there is in at least one of the radicals R_1X—, R_2X—, R_3, at least one piperidine radical of formula (II) present.

4,263,437
ACETIC ACID DERIVATIVES OF 5,6-DIHYDROBENZO[b]PYRIDO[3,2-F]THIEPINE AND OXEPINE

Yasuo Fujimoto, Tokyo, and Shigeru Yamabe, Kobe, both of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,610
Claims priority, application Japan, Mar. 1, 1978, 53/22097
The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.
Int. Cl.[3] C07D *491/44, 495/04*
U.S. Cl. 546—89 **8 Claims**

1. A compound of the formula,



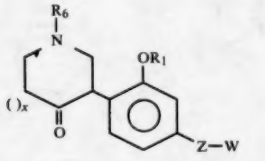
wherein X represents an oxygen or two hydrogen atoms, A represents an oxygen or sulfur atom, and R represents hydroxy, amino or a lower alkoxy group having 1 to 5 carbon atoms.

4,263,438
3-[2,4-(DISUBSTITUTED)-PHENYL]AZACYCLOALKANONES AS ANALGESICS

Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 832,869, Sep. 13, 1977, Pat. No. 4,147,872.
This application Jan. 2, 1979, Ser. No. 419
Int. Cl.[3] C07D *211/74*
U.S. Cl. 546—216 **5 Claims**

1. A compound having the formula



wherein R_1 is selected from the group consisting of hydrogen, benzyl and alkanoyl having from one to five carbon atoms;

R_6 is selected from the group consisting of hydrogen, alkenyl having from two to six carbon atoms, alkynyl having from two to six carbon atoms and R_6' wherein R_6' is selected from the group consisting of alkyl having from one to six carbon atoms, phenylalkyl having from one to four carbon atoms in the alkyl group and cycloalkylmethyl having from three to six carbon atoms in the alkyl group;

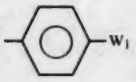
x is 0 or an integer from 1 to 3;

Z is selected from the group consisting of

(a) alkylene having from one to thirteen carbon atoms;

(b) $—(alk_1)_m—O—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from one to thirteen carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than thirteen; each of m and n is 0 or 1;

and W is selected from the group consisting of pyridyl and



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; or a pharmaceutically acceptable acid addition salt thereof.

4,263,439
PROCESS FOR PREPARING PYRIDINE BASES

Tetsuya Miyake, Tokyo; Kohji Noguchi, and Kazuo Imamura, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 841,083, Oct. 11, 1977, Pat. No. 4,179,576.
This application Jun. 14, 1979, Ser. No. 48,572
Claims priority, application Japan, Oct. 27, 1976, 51-128192; Oct. 27, 1976, 51-128194; Oct. 27, 1976, 51-128195
Int. Cl.[3] C07D *213/10*
U.S. Cl. 546—251 **25 Claims**

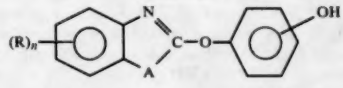
1. A process for preparing pyridine bases comprising reacting acetaldehyde with 0.5 to 3 times the molar amount of ammonia in the gas phase at a temperature of 300° to 550° C. and at a space velocity of 200 to 10,000 hr^{-1} in the presence of a catalyst prepared by combining an oxidic or ionic salt containing a metal selected from the group consisting of tungsten, manganese, nickel, iron, molybdenum, uranium, lead and tin into silica-alumina simultaneously with preparation of the silica-alumina.

4,263,440
2-BENZAZOLYL, 2-BENZOTHIAZOLYL AND 2-IMIDAZOLYL

Reinhard Handte, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,092
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1977, 2738963
Int. Cl.[3] C07D *277/68, 263/58, 235/26*
U.S. Cl. 548—165 **1 Claim**

1. A heterocyclic phenyl ether of the formula I



in which

R is an identical or different radical selected from the group of halogen, $—CF_3$, methyl and ethyl,

A is O, S, or N-$(C_1$–$C_4)$ alkyl and

n is zero to 2, and when R is $—NO_2$ or —CN, n is zero to 1, with the proviso that if n is zero and A is S, the free OH group does not stand in p-position to the ether linkage.

4,263,441

NOVEL FLUORINE-CONTAINING BENZ-AZOLE DERIVATIVES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS OPTICAL BRIGHTENERS

Ulrich Pintschovius, Hattersheim am Main; Erich Schinzel, Hofheim am Taunus, and Günter Rösch, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,924

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1977, 2750947

Int. Cl.[3] **C07D** *263/062, 277/66;* **C09K** *11/06, 9/02*

U.S. Cl. 548—220 **2 Claims**

1. A compound of the formula

in which X is trifluoromethyl, n is the integer 1 or 2, Z is oxygen, and the benzo rings may be substituted by one or two lower alkyl, lower alkoxy, halogen, cyano, carbo-lower alkoxy, phenyl or benzyl.

4,263,442

PROCESS FOR THE PREPARATION OF 2,3-DIHYDRO-5,6-DIPHENYL-1,4-OXATHIIN

Michael A. Puttock, Guelph; Ethel E. Felauer, Arkell, and Bruce A. Graham, Guelph, all of Canada, assignors to Uniroyal Ltd., Ontario, Canada

Filed Jun. 9, 1980, Ser. No. 157,725

Claims priority, application Canada, May 2, 1980, 351139

Int. Cl.[3] **C07D** *327/06*

U.S. Cl. 549—14 **7 Claims**

1. A method of making 2,3-dihydro-5,6-diphenyl-1,4-oxathiin comprising bringing together benzoin and 2-mercaptoethanol in the presence of an alkanol containing 2 to 8 carbon atoms and an acidic catalyst, removing water of reaction, and thereafter recovering 2,3-dihydro-5,6-diphenyl-1,4-oxathiin.

4,263,443

CONVERSION OF ALDEHYDES

John F. White, Princeton, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed Nov. 22, 1978, Ser. No. 963,076

Int. Cl.[3] **C07C** *51/00, 67/00, 69/12*

U.S. Cl. 549—83 **2 Claims**

1. A process which comprises heating an aldehyde and an alcohol moiety, in the presence of a rhodium or iridium catalyst and in the presence of an iodide or a bromide, water being an optional solvent, to produce a product which comprises (a) a compound of the formula RH and an ester, (b) a compound of the formula RH and an ester and an acid, or (c) a compound of the formula RH and an acid, the acid of (c) being obtained when water is used as a solvent, said aldehyde having the formula RCHO and said alcohol having the formula R^1OH, R^1 being an aliphatic, alicyclic or aromatic hydrocarbon group, optionally containing non-interfering substituents, and R^1 being alkyl, alkenyl, cycloalkyl, aralkyl, aralkenyl, aryl, furyl or thienyl.

4,263,444

HYDROXY TERMINATED POLYBUTADIENE BASED POLYURETHANE BOUND PROPELLANT GRAINS

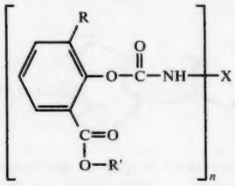
William H. Graham, and Inella G. Shepard, both of Huntsville, Ala., assignors to Thiokol Corporation, Newtown, Pa.

Division of Ser. No. 836,925, Sep. 26, 1977, which is a division of Ser. No. 741,591, Nov. 15, 1976, Pat. No. 4,098,626. This application Nov. 17, 1978, Ser. No. 961,589

Int. Cl.[2] **C08G** *18/32, 18/62, 18/69*

U.S. Cl. 560—26 **2 Claims**

1. A curable composition comprising a liquid hydroxy terminated polybutadiene and a compound of the formula:



wherein X is an n valent organic radical; R is hydrogen or lower alkyl of about 1 to about 10 carbon atoms; R' is lower alkyl of about 1 to about 10 carbon atoms, or carbocyclic aryl of from 6 to about 10 carbon atoms; and n is 2 or 3.

4,263,445

ω-ARYL-13,14-DIDEHYDRO-PGA COMPOUNDS

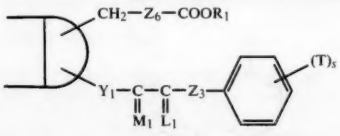
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 776,552, Mar. 7, 1977, which is a division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681. This application Apr. 28, 1978, Ser. No. 901,168

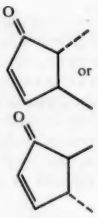
Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 560—62 **38 Claims**

1. A prostaglandin analog of the formula:



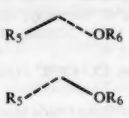
wherein D is



wherein Y_1 is —C≡C—;
wherein Z_6 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
wherein g is one, 2, or 3;
wherein Z_3 is oxa or methylene;

wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, and s is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl;

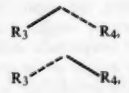
wherein M_1 is



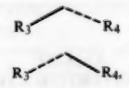
or

wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro and Z_3 is methylene; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,263,446

PROCESS FOR MAKING 3-(3,5-DIALKYL-4-HYDROXYPHENYL)PROPIONATE ESTERS OF HYDROXYALKYLOXAMIDES

Edward L. Wheeler, Watertown, and Elmar H. Jancis, Naugatuck, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 30, 1979, Ser. No. 43,788
Int. Cl.³ C07C *69/612*
U.S. Cl. 560—75 **5 Claims**

1. A process for making esters of the formula $-[CONHA-(OCOR)_n]_2$, wherein R is a 2-(3,5-di-Z-4-hydroxyphenyl-)ethyl radical, A is a C_2 to C_{12} linear or branched hydrocarbyl radical of the valence n+1, n is an integer 1 to 3 and Z is a linear or branched C_1 to C_9 linear or branched alkyl, comprising heating a C_1 to C_4 alkyl ester of 3-(3,5-di-Z-4-hydroxyphenyl)propionic acid wherein Z is as defined above, with an alcohol of the formula $[-CONHA-(OH)_n]_2$, wherein A and n are as defined above, in the presence of an linear or branched alkanestannonic acid at a temperature of from 150°-230° C., the lower boiling alcohol being removed by distillation.

4,263,447

PREPARATION OF ALLYLIC CYCLOALKENOLS AND CARBOXYLIC ACID ESTERS THEREOF

Benjamin Phillips, Riverside, Conn.; Walter J. Skraba, Sarasota, Fla., and Daniel W. McNeil, New Fairfield, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,124
Int. Cl.³ C07C *67/08, 69/03*
U.S. Cl. 560—231 **12 Claims**

1. Method of preparing allylic cycloalkenols and/or allylic cycloalkenol esters by an autoxidation process which comprises contacting a cyclomonoolefin having 5 to 8 carbons selected from the group consisting of cyclopentene, methylcyclopentenes, cyclohexene, cycloheptene and cycloocetene in a liquid phase in the presence of at least about 0.05 mol, per mol of cyclomonoolefin of an organic acid activator having one carboxyl group, 1 to about 10 carbons and free of aliphatic ethylenically unsaturated groups selected from the class consisting of saturated aliphatic monocarboxylic acids, aromatic monocarboxylic acids, halosubstituted benzoic acids, and arylalkyl monocarboxylic acids, with an oxygen-containing gas and a catalytic amount of a mixture of cobalt and copper compounds which are soluble in the organic acid at a temperature of about 30° to about 150° C. for a time sufficient to produce allylic cycloalkenols and/or allylic cycloalkenol esters of one of said organic acids.

4,263,448

PROCESS FOR OXIDATION OF HYDROCARBONS

James Leacock, New York, N.Y., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,505
Int. Cl.³ C07C *67/05*
U.S. Cl. 560—246 **5 Claims**

1. In a process for forming vicinal glycol ester wherein an olefin is oxidized with molecular oxygen in a reaction zone at elevated temperature in the presence of a liquid reaction medium containing a monobasic carboxylic acid and catalyst for the reaction, the improvement which comprises:

(a) withdrawing at least a portion of the liquid reaction medium containing vicinal glycol ester from the reaction zone;

(b) passing at least a portion of the withdrawn liquid reaction medium to an oxygen-injection zone external to the reaction zone;

(c) contacting the liquid in said oxygen-injection zone with a gas stream containing molecular oxygen under conditions sufficient to form a two-phase gas/liquid mixture containing gas bubbles having an average diameter of less than about 0.5 inch distributed throughout the liquid and containing dissolved gases in an amount of less than about 20% of the mass of gases present as said gas bubbles, said two-phase gas/liquid mixture being substantially free of gas bubbles having an effective bubble diameter greater than 8 times said average bubble diameter; and

(d) passing said two-phase gas/liquid to said reaction zone as the feed of molecular oxygen thereto.

4,263,449

PROCESS FOR PRODUCING ALCOHOLS

Toshihiro Saito; Yukihiro Tsutsumi, and Shoji Arai, all of Shinnanyo, Japan, assignors to Toyoda Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,438
Claims priority, application Japan, May 15, 1979, 54-58580
Int. Cl.³ C07C *67/38, 29/16, 31/20, 41/01*
U.S. Cl. 560—263 **8 Claims**

1. In a process for producing an alcohol from a compound having an alkenyl group by a hydroformylation of said compound having an alkenyl group in a substantially water immiscible solvent in the presence of a hydroformylation catalyst which is soluble in said solvent and a hydrogenation of the

reaction mixture in the presence of a hydrogenation catalyst, an improvement characterized in that water is added at a ratio of 0.5 to 30 times by weight based on an aldehyde produced by said hydroformylation before said hydrogenation, and an organic phase containing the hydroformylation catalyst component is separated from a water phase containing the alcohol produced by said hydrogenation and said organic phase is recycled into said hydroformylation.

4,263,450

PROCESS FOR SEPARATING LEUCINE, ISOLEUCINE AND VALINE

Walter Steinmetzer, Süpplingen, Fed. Rep. of Germany, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jul. 15, 1980, Ser. No. 169,229

Claims priority, application European Pat. Off., Jul. 19, 1979, 79102545.5

Int. Cl.³ C07C *99/12*

U.S. Cl. 562—554 **4 Claims**

1. A process for the separation of leucine, isoleucine and valine which comprises concentrating a solution of these three amino acids at a pH-value of from 1.5 to 2.0 to produce a first mother liquor, enriched with isoleucine and valine and a first solid phase, enriched with leucine, and separating the mother liquor from the solid phase.

2. A process according to claim 1 which further comprises adding hydrochloric acid to the mother liquor enriched with isoleucine and valine, concentrating the mother liquor to produce a second mother liquor, enriched with valine and leucine, and a second solid phase, enriched with isoleucine, and separating the second mother liquor from the second solid phase.

4,263,451

REMOVING CARBONACEOUS CONTAMINANT FROM ZINC OXIDE

Ronnie L. Lewis, and Fred T. Sherk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 15, 1979, Ser. No. 85,172

Int. Cl.³ C07C *63/26, 63/08*

U.S. Cl. 562—481 **4 Claims**

1. A method for removing carbonaceous impurity from a mixture with zinc oxide, said method comprising:

(a) contacting a water slurry of zinc oxide contaminated with carbonaceous impurity in a reaction zone with oxygen under conditions sufficient to produce an effluent comprising zinc oxide and oxides of carbon, and

(b) passing the effluent from the reaction through a filter to collect solid zinc oxide while the oxides of carbon pass through the filter.

4. In the reaction of potassium benzoate in the presence of a zinc benzoate catalyst to produce terephtholic acid in which water quenching of the reaction effluent produces a slurry stream containing a mixture of zinc oxide and carbonaceous impurity,

a method for regenerating zinc benzoate catalyst from said zinc oxide containing stream comprising:

(a) removing said carbonaceous impurity from the mixture with zinc oxide by contacting the water slurry in a reaction zone with oxygen under conditions sufficient to produce an effluent comprising zinc oxide and oxides of carbon and passing the resultant effluent from this reaction through a filter to collect solid zinc oxide while the oxides of carbon pass through the filter to provide zinc oxide of at least reduced carbonaceous impurity content, and

(b) contacting said zinc oxide with molten benzoic acid thereby producing zinc benzoate.

4,263,452

PROCESS FOR PURIFYING TEREPHTHALIC ACID

Makoto Komatsu, and Ryoichi Oda, both of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 48,445, Jun. 14, 1979, abandoned. This application May 6, 1980, Ser. No. 147,283

Claims priority, application United Kingdom, Jun. 12, 1979, 7920472/79; Fed. Rep. of Germany, Jun. 19, 1979, 2924665; Netherlands, Jun. 20, 1979, 7904840; France, Jun. 21, 1979, 7915964

Int. Cl.³ C07C *51/42*

U.S. Cl. 562—487 **6 Claims**

1. In a process for purifying crude terephthalic acid obtained by oxidation of p-tolualdehyde in a liquid phase with molecular oxygen in the presence of a bromine compound as a catalyst, wherein said crude terephthalic acid is dissolved in water, the resulting aqueous solution of terephthalic acid is hydrogenated with molecular hydrogen in the presence of a hydrogenating catalyst, and the terephthalic acid is recovered from the hydrogenated aqueous solution, the improvement comprising: (a) adding less than 2.5 parts by weight of an alkaline material to the aqueous solution of terephthalic acid before the hydrogenation per 100 parts by weight of the crude terephthalic acid; and (b) recrystallizing the terephthalic acid from the hydrogenated solution by cooling said solution without prior acidification.

4,263,453

PROCESS FOR CONVERTING CYCLOHEXANE TO ADIPIC ACID

Johann G. D. Schulz, Pittsburgh, and Anatoli Onopchenko, Monroeville, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 10, 1979, Ser. No. 101,621

Int. Cl.³ C07C *51/31, 55/14*

U.S. Cl. 562—543 **10 Claims**

1. In a process wherein cyclohexane is converted to adipic acid in a system consisting essentially of cyclcohexane, an aliphatic monobasic acid solvent, cobaltic ions and molecular oxygen, wherein the cyclohexane is subjected to oxidation with oxygen in the presence of cobaltic ions in an aliphatic monobasic acid having only primary and secondary hydrogen atoms and from two to eight carbon atoms, the amount of cobalt present being in excess of about 25 millimols of cobalt per mol of cyclohexane, while maintaining a temperature of about 85° to about 135° C. and an oxygen partial pressure of at least about 150 pounds per square inch absolute, improving the yield of adipic acid by adding free water to the reaction system, the amount of water added being in the range of about 0.5 to about 15 weight percent based on the weight of aliphatic monobasic acid solvent.

4,263,454

LITHIUM RIBONATE, LITHIUM ARABONATE AND THE PREPARATION AND PURIFICATION OF THESE SALTS

Wolfram Schmidt, Friedelsheim, and Joachim Paust, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 100,723

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852720

Int. Cl.³ C07C *59/105*

U.S. Cl. 562—587 **2 Claims**

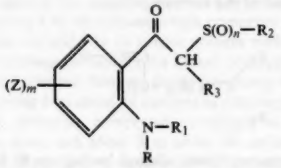
1. Lithium ribonate.

4,263,455
NOVEL 2-SULPHONYL- (OR -SULPHINYL)-2'-AMINOACETOPHENONES

Pier G. Ferrini, Binningen; Richard Göschke; Alfred Salimann, both of Bottmingen, and Alberto Rossi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 846,305, Oct. 28, 1977, Pat. No. 4,192,873.
This application Sep. 27, 1979, Ser. No. 79,605
Claims priority, application Switzerland, Nov. 25, 1976, 14845/76
Int. Cl.³ C07C *87/60, 97/10;* A61K *31/135*
U.S. Cl. 564—305 **11 Claims**

1. An ortho-aminoacetophenone of the formula I



(I)

and its tautomers, in which Z is hydrogen, halogen, lower alkyl, cycloalkyl, lower alkoxy, trifluoromethyl, nitro or substituted or unsubstituted sulphamoyl, m is 1 or 2, R is lower alkyl, R_1 is hydrogen or lower alkyl, R_2 is lower alkyl, cycloalkyl, aryl, cycloalkyl-lower alkyl, aryl-lower alkyl or substituted or unsubstituted pyridyl, R_3 is hydrogen or lower alkyl and n is 1 or 2, with the exception of, 2'-methylamino-2-(methylsulphinyl)-acetophenone, and its salts.

4,263,456
PROCESS OF PREPARING STYRENATED DIPHENYLAMINE

Edward A. Rogers, Jr., Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 2, 1976, Ser. No. 746,650
Int. Cl.³ C07C *85/18*
U.S. Cl. 564—315 **2 Claims**

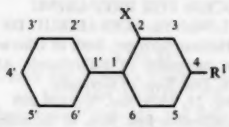
1. In a process for the preparation of styrenated diphenylamine comprising reacting a combination comprising (a) diphenylamine and (b) styrene in the presence of a catalytic amount of an undried acid clay catalyst containing a major amount of aluminum hydrosilicate at a reaction temperature of from 190° to 220° C. wherein the level of styrene is from 1.95 to 2.15 mols per mol of diphenylamine, the improvement characterized in that the undried acid clay catalyst contains 6 to 9 percent water.

4,263,457
PROCESS FOR PRODUCING BIPHENYL DERIVATIVES

Makoto Takeda; Eiji Taniyama; Yuji Ozawa; Makoto Imanari; Kunimasa Takahashi, and Hiroshi Iwane, all of Ami, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

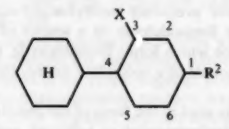
Filed Aug. 17, 1979, Ser. No. 67,550
Claims priority, application Japan, Aug. 18, 1978, 53/100771
Int. Cl.³ C07C *45/65, 29/00*
U.S. Cl. 568—316 **8 Claims**

1. A process for producing a halobiphenyl derivative represented by a formula (I) which comprises dehydrogenerating a cyclohexylhalobenzene represented by a formula (II) in the presence of a dehydrogenating agent selected from the group consisting of (1) a catalyst consisting essentially of a catalytically active component supported on a refractory inorganic support, said catalytically active component being selected from the group consisting of tungsten oxide, zirconium oxide and mixtures thereof and (2) sulfur under such conditions that no substantial dehalogenation occurs, the formula (I) being



(I)

the formual (II) being



(II)

wherein X represents a halogen atom, and R^1 and R^2 independently represent a group represented by the formula

wherein A represents a carboxyl or alkoxycarbonyl group and R_3 represents a hydrogen atom or lower alkyl group; an alkylcarbonyl; alkenyl; alkyl; hydroxyalkyl or cyanoalkyl group.

4,263,458
PREPARATION OF AROMATIC FLUORO-COMPOUNDS

Roy D. Bowden, Frodsham; Leslie Burgess, Runcorn, and Raymond J. Clark, Mossley Hill, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 19, 1979, Ser. No. 22,595
Claims priority, application United Kingdom, Aug. 25, 1978, 34662/78
Int. Cl.³ C07C *45/28*
U.S. Cl. 568—323 **6 Claims**

1. A process for the preparation of 4,4'-difluoro-benzophenone which comprises the following steps:

(1) diazotization of 4,4'-diamino-diphenylmethane in anhydrous or concentrated aqueous hydrogen fluoride to yield a solution of a corresponding diazonium fluoride and

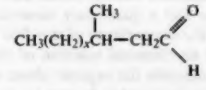
(2) thermally decomposing the diazonium fluoride in the solution produced in Step 1, in the presence of nitrous acid or nitrite ions as oxidising agent, to yield 4,4'-difluorobenzophenone.

4,263,459
3-METHYL-ALDEHYDES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS ODORANTS

Kurt Bauer, Holzminden; Detlef Hagena, Hoexter, and Hans-Otto Müller, Holzminden, all of Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,349
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929340
Int. Cl.³ C07C *47/02*
U.S. Cl. 568—448 **1 Claim**

1. 3-methyl-aldehydes of the general formula:



wherein

x is 6 or 7.

4,263,460
PROCESS FOR PREPARING METHYL-NONYL-ACETALDEHYDE

Jürgen Weber, and Helmut Springer, both of Oberhausen, Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,299
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855506
Int. Cl.[3] C07C *47/06*
U.S. Cl. 568—457 1 Claim

1. In a process for preparing methyl-nonyl-acetaldehyde from undecanal and formaldehyde or a source of formaldehyde, e.g., a substance which forms formaldehyde, in the presence of catalytic amounts of a secondary amine, the improvement wherein

A. the undecanal is used in the form of the reaction mixture obtained by hydroformylation of 1-decene, and

B. di-n-butylamine is used as the catalyst,

C. the molar ratio of catalyst to undecanal is 0.025 to 0.050 to 1,

D. the reaction is carried out at 90° to 100° C., and

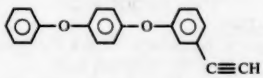
E. the 2-methylene-undecanal formed is then converted by partial hydrogenation into methyl-nonyl-acetaldehyde.

4,263,461
POLYPHENYL ETHER COMPOUNDS

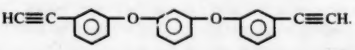
Bruce A. Reinhardt, New Carlisle, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 26, 1979, Ser. No. 88,505
Int. Cl.[3] C07C *43/275, 43/285*
U.S. Cl. 568—636 3 Claims

1. A compound selected from the group of compounds having the following structural formulas:



and



4,263,462
PROCESS FOR THE PREPARATION OF UNSATURATED ETHERS

Daniel Michelet, Tassin La Demi Lune, and Michel Rakoutz, Oullins, both of France, assignors to Philagro, Lyons, France

Filed Nov. 7, 1979, Ser. No. 92,415
Claims priority, application France, Nov. 30, 1978, 78 34297
Int. Cl.[3] C07C *41/01*
U.S. Cl. 568—652 27 Claims

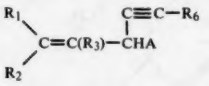
1. A process for the preparation of a β,γ-unsaturated alkenyloxyphenol from pyrocatechol and a β,γ-unsaturated alkenyl halide, wherein, in a first zone, there is a liquid medium consisting of two liquid phases of which one is organic and the other is aqueous, these phases being mixed with one another, and the liquid medium being obtained by mixing the pyrocatechol, the β,γ-unsaturated alkenyl halide, an organic solvent, a basic agent, water and a quaternary ammonium or phosphonium derivative, the temperature of this first zone being such that substantially no chemical reaction of the alkenyl halide takes place, and wherein the organic phase is then separated from the aqueous phase and is heated in a second zone, this heating being effected at a temperature which is sufficient for the alkenyl halide to react.

4,263,463
ACETYLENIC SECONDARY ALCOHOLS

Shigeyoshi Kitamura, Saitama; Norbushige Itaya, Nishinomiya; Yoshitoshi Okuno; Nobuo Ohno, both of Toyonaka; Takashi Matsuo, Nishinomiya; Masachika Hirano; Toshio Mizutani, both of Toyonaka, and Hisami Takeda, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 461,029, Apr. 15, 1974, Pat. No. 4,003,945.
This application Oct. 26, 1976, Ser. No. 735,733
Claims priority, application Japan, Apr. 20, 1973, 48-45915; May 24, 1973, 48-58830; Jun. 4, 1973, 48-63118
Int. Cl.[3] C07B *33/042, 33/048*
U.S. Cl. 568—873 8 Claims

1. A compound of the formula,



wherein R_1 represents lower alkenyl having up to 5 carbon atoms, or lower alkynyl having up to 5 carbon atoms; R_2 and R_3 individually represent hydrogen, lower alkyl having up to 5 carbon atoms, lower alkenyl having up to 5 carbon atoms, or lower alkynyl having up to 5 carbon atoms; R_6 represents hydrogen or methyl;

and A is hydroxy.

4,263,464
STABILIZED COMPOSITIONS CONTAINING METHYLENE CHLORIDE

Marcel Godfroid, Wavre, and Roger Gerkens, Braine-l'Alleud, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Oct. 23, 1978, Ser. No. 953,613
Claims priority, application France, Oct. 24, 1977, 77 32188
Int. Cl.[3] C09D *9/00*
U.S. Cl. 570—109 9 Claims

1. A methylene chloride composition containing hexamethylenetetramine and at least one epoxide as stabilizers for the methylene chloride.

4,263,465
SYNTHETIC LUBRICANT

Ming N. Sheng, Cherry Hill, N.J., and Mary T. Arnold, Upland, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 10, 1979, Ser. No. 74,190
Int. Cl.[3] C07C *9/00, 2/74*
U.S. Cl. 585—18 21 Claims

1. A process for preparing a low viscosity synthetic lubricant comprising:

(a) as a first step polymerizing butene-1 to an oligomeric product having a number average carbon content of about 8 to 18 carbon atoms per molecule, and

(b) as a second step copolymerizing the oligomer obtained in step 1 with at least one alpha-monoolefin having 8 to 18 carbon atoms to a polymeric product having an average of about 20 to 40 carbon atoms per molecule, said first and second polymerization steps being catalyzed by a boron trifluoride-promoter complex-free boron trifluoride catalyst system and the ratio of said oligomer and said alpha-monoolefin in the second step reaction zone being such that the resulting copolymer contains about 10 to 80% polybutene units based on the total weight of polymeric material in the product.

17. A synthetic lubricant comprised of a copolymer of a butene oligomer having a number average of 8 to 18 carbon atoms and at least one alpha-monoolefin having 8 to 18 carbon

atoms, said copolymer having an average of about 20 to 40 carbon atoms per molecule.

4,263,466

COUPLING OF ARYL AND HETEROARYL MONO CHLORIDES

Ismael Colon, Middlesex; Louis M. Maresca, Belle Mead, and George T. Kwiatkowski, Green Brook, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 955,758, Oct. 30, 1978, abandoned. This application Sep. 11, 1979, Ser. No. 72,310

Int. Cl.[3] **C07C** *1/26*

U.S. Cl. 585—421 **20 Claims**

1. A method for coupling aryl and heteroaryl mono chlorides having 4 to 30 carbons which comprises contacting said aryl mono chlorides in an aprotic solvent with a catalyst mixture comprising an anhydrous nickel compound and at least one ligand selected from the group consisting of a triaryl phosphine having 6 to about 14 carbons in each aryl moiety and an aromatic bidentate compound containing at least one ring nitrogen atom and about 5 to about 30 carbon atoms in the presence of a reducing metal selected from the group consisting of zinc, magnesium or manganese, at a temperature of about 0° to about 250° C., wherein the ratio of gram atoms of nickel to moles of aryl chloride is in the range of about 0.0001 to about 0.5, the amount of ligand is about 0.1 to about 100 moles per gram atom of nickel and the amount of reducing metal is at least about 0.5 gram atoms per mole of reacted aryl chloride.

4,263,467

RECOVERY OF BORON TRIFLUORIDE FROM A HYDROCARBON LIQUID

Ajay M. Madgavkar, Pittsburgh, and Robert Bartek, Windber, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 29, 1979, Ser. No. 98,499

Int. Cl.[3] **C07C** *2/08, 7/12;* **C01B** *35/06;* **B01J** *19/04*

U.S. Cl. 585—525 **6 Claims**

1. In the oligomerization of a 1-olefin with boron trifluoride catalyst the method for recovering boron trifluoride catalyst that is dissolved in the crude oligomer product mixture resulting from the oligomerization reaction which comprises introducing the crude oligomer product mixture into the top of a non-heated column containing a bed of an inert metallic or ceramic packing material at the temperature of the oligomerization process of between about −30° and about 50° C. and at a maximum pressure of about 600 mm. of Hg. absolute and permitting said oligomer product mixture to trickle through said bed and disperse itself as a thin film on said packing material whereby said boron trifluoride desorbs and vaporizes off and is collected in the pure state for reuse in the oligomerization process and said substantially boron trifluoride-free oligomer product mixture is recovered from the bottom of the column.

4,263,468

PLASMA-ARC MELTING FURNACE

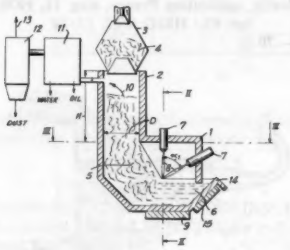
Konrad Primke, Mölkau, and Peter Papsdorf, Leipzig, both of DDX, assignors to VEB Mansfeld Kombinat Wilhelm Pieck, Lutherstadt-Eisleben, German Democratic Rep.

Filed Jun. 29, 1978, Ser. No. 920,279

Claims priority, application German Democratic Rep., Jun. 29, 1977, 199770

Int. Cl.[2] H05H *1/00*; H05B *7/00*

U.S. Cl. 13—2 P 11 Claims



1. A plasma-arc furnace for continuously melting metals, particularly for melting down recovered light-metal scrap, comprising, in combination: a trough-shaped melting vessel (1); a substantially vertical stack (2) above said vessel, said vessel and said stack together defining an inner furnace space; said stack serving to receive material (4) to be melted, by way of a feeding device (3), provided on top of said stack and sealed thereagainst in a gas-tight manner; a sump (6) below said vessel; a conical charge chute (5) formed within said furnace space between said stack and said sump; at least two plasma-arc burners (7) so arranged that base points of their arcs (8) are within an area of transition from said chute to said sump; an electromagnetic stirring device (9) associated with said sump; means (14, 15) for removing molten metal, disposed at said sump; and means (11, 12) for cleaning exhausted plasma gas (10) that is led thereto at a location in said stack just below said feeding device, by removing from the gas at least one of gaseous, liquid and pulverulent foreign substances so that cleaned exhaust gas (13) can be discharged to the atmosphere.

4,263,469

ROLLER CRADLE OF AN INHERENTLY STABLE FURNACE

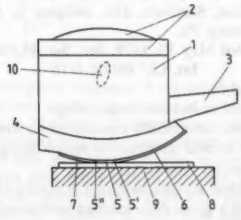
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Sep. 6, 1979, Ser. No. 73,018

Claims priority, application Switzerland, Sep. 28, 1978, 10119/78

Int. Cl.[3] F27D *3/14*

U.S. Cl. 13—10 13 Claims



1. A roller cradle of a slag furnace of the beam inherently stable type which rolls on a movable beam, comprising a contact surface which engages the movable beam and which includes a rest portion intermediate the ends of the cradle, said rest portion defining a smaller curvature of roll than remaining portions of said contact surface and being curved in negative relationship to the movable beam, said remaining portions being curved in positive relationship to the beam, the length of said rest portion, in the direction of roll, being equal to twice the quotient of the minimum restoring moment and the average furnace weight, increased by the length by which the center of gravity can be shifted horizontally.

4,263,470

HOLDING DEVICE FOR ELECTRICAL RESISTANCE ELEMENTS IN FURNACES

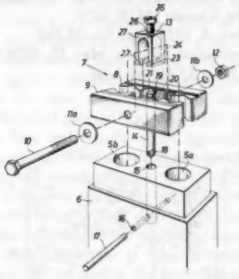
Nils G. Sjöberg, Hallstahammar, Sweden, assignor to Bulten-Kanthal AB, Hallstahammar, Sweden

Filed Jul. 25, 1979, Ser. No. 60,703

Claims priority, application Sweden, Aug. 30, 1978, 7809151

Int. Cl.[3] H05B *3/06*

U.S. Cl. 13—25 12 Claims



1. A holding device for electrical resistance elements (1) to be suspended in lead-through bricks (6) in furnaces, comprising a holder (7) having two opposed holding jaws (8,9) for securing the terminal portions (3*a*, 3*b*) of a said resistance element, said portions extending through holes in a said lead-through brick, said holder (7) being connected and braced to said lead-through brick by means of an anchoring device comprising an anchor member (14) secured to said lead-through brick (6) and a fastening member (13, 25) secured to said holding jaws (8, 9), said anchor and fastening members (13, 14) being removably connected to each other, and at least one of these members being movably mounted so as to permit adjustment of said anchoring device prior to the fastening of said holder (7) to said load-through brick (6).

4,263,471

CABLE FOR DIGITAL TRANSMISSION

Laurent Bauguion, Chaponost, France, assignor to Les Cables de Lyon, Lyon, France

Filed Jan. 3, 1980, Ser. No. 109,374

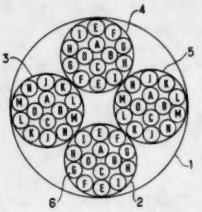
Claims priority, application France, Jan. 3, 1979, 79 00075

Int. Cl.[3] H01B *11/04*

U.S. Cl. 174—34 5 Claims

1. A cable for digital transmission, said cable being constituted by a plurality of twisted quads each of which has a particular twist length, a plurality of quads being grouped together to form a bundle having a central layer of quads surrounded by at least one further layer of quads and four bundles being grouped together to form the cable, wherein the or each layer of quads surrounding the central layer of a bundle includes quads of identical twist length, arranged so that within any one layer there are at least two quads of different twist lengths between a pair of quads of identical twist length, wherein the bundles all have identical arrangements of twist lengths in their

inner layer(s) of quads, the arrangements differing only for their outermost layers and wherein diametrically opposite pairs of bundles in the cable have identical arrangements of twist lengths.

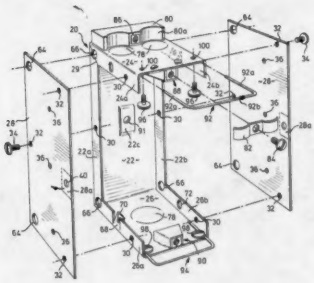


4,263,472

ELECTRICAL BOX

Joseph S. Maheu, 10 Ruddington Dr., Apt. 10 North, #307, Willowdale, Ontario, Canada (M2K 2J7)

Filed Jun. 4, 1979, Ser. No. 45,505
Claims priority, application Canada, May 23, 1979, 328174
Int. Cl.[3] H02G *3/08*
U.S. Cl. 174—51 **6 Claims**



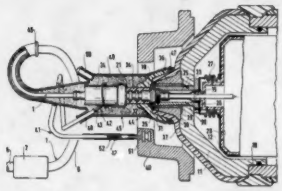
1. An electrical box adapted to be secured side by side with other similar boxes and comprising: a base member shaped to define a back wall, and top and bottom walls formed integrally with the back wall and extending outwardly from said back wall generally normal thereto; and two initially separate, plain rectangular side plates for forming sides of said box; wherein each of said walls has inwardly directed integral flanges along both sides of said base member and the flanges of the respective walls at each side of the base member co-operate to define attachment faces for the relevant said side plate, wherein each of said flanges is formed with at least one screw threadea opening which aligns with a corresponding plain opening in the relevant side plate and which receives a screw rigidly clamping the side plate to the flange, whereby the side plates and base member together define an integrated structural box capable of being secured to a support by way of either of said side plates, and wherein one of said flanges on the bottom wall of the box and the flange at the opposite side of the top wall of the box each include a tab portion which is inwardly inclined with respect to the remainder of the flange and which is formed with a screw threaded opening, and wherein each of the other flanges on said top and bottom wall is formed with a plain opening which is elongated in a direction generally normal to said wall at a position to correspond with the opening in said tab portion so that, when said base member is positioned side by side with a second similar member, the abutting top and bottom wall flanges of the two members can be secured together by two screws, each inserted through one of said elongated plain openings of one member and engaged in the tab opening of the adjacent member and tightened to clamp said members together.

4,263,473

SEALED CONNECTION BETWEEN A COAXIAL UNDERWATER CABLE AND AN ELECTRONIC APPARATUS

Lucien Rocton, Malakoff, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 6, 1979, Ser. No. 64,165
Claims priority, application France, Aug. 11, 1978, 78 23719
Int. Cl.[3] H02G *9/02, 15/14*
U.S. Cl. 174—70 S **7 Claims**



1. A sealed connection between a coaxial underwater cable and an underwater device comprising an electronics block housed in a sealed housing; said housing having at least one cover including an access and a length of lead-in coaxial cable which passes through the access in a sealed manner, the lead-in cable being connected to the electronics block at one end and having means at its other end external to the housing for connection to a coaxial cable, wherein a length of the lead-in coaxial cable in the vicinity of where it passes through the access is stripped of its outer conductor and the insulation surrounding the inner conductor is fitted in the bore of a metal tube having a notched outer surface, i.e. a surface which is crenellated in axial section, the outside end of the notched metal tube being electrically connected to the outer conductor of the lead-in coaxial cable by means of a metal shell which covers a plug of insulating material itself welded to a stripped length of the insulation covering the inner conductor and also embracing a notched length of the notched metal tube to provide a grip thereon, the inside end of the notched metal tube being electrically connected to the electronics block via annular metal bellows, and the lead-in cable being provided where it passes through the access with sealing means and means for locking it therein.

4,263,474

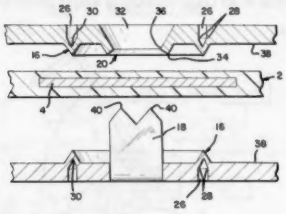
UNDER CARPET CABLE CONNECTOR

Robert J. Tennant, Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 30, 1979, Ser. No. 43,966
Int. Cl.[3] H01R *4/18*
U.S. Cl. 174—84 C **10 Claims**

1. An electrical connector comprising:
first and second electrically connected termination means,
said first and second termination means being comprised of first and second opposed surfaces,
said first opposed surface having a plurality of contact rings thereon and a guide hole located within each of said plurality of contact rings,
said second opposed surface having a plurality of contact rings, equal to said plurality of contact rings on said first opposed surface, thereon and a lance means located within each of said plurality of contact rings, whereby upon

moving said opposed surfaces together, said lances pass through said guide holes and said plurality of contact rings



on said first surfaces are in alignment with said plurality of contact rings on said second surface.

4,263,475

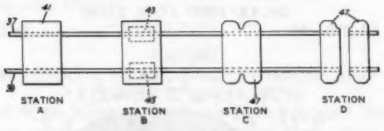
DYNAMOELECTRIC MACHINE INSULATORS

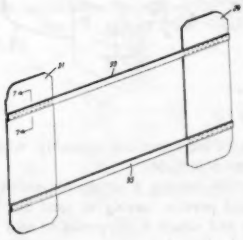
Walter P. McNeal, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 536,946, Dec. 23, 1974, Pat. No. 4,100,005, which is a continuation-in-part of Ser. No. 333,786, Feb. 20, 1973, Pat. No. 3,880,194. This application May 30, 1978, Ser. No. 910,618

Int. Cl.³ H02K *3/34*

U.S. Cl. 174—138 E **7 Claims**





1. A between-phase insulator for insulating different phase windings from one another in a stator of an electric motor, the stator having a plurality of spaced-apart slots therein, the insulator comprising first and second sheets of insulating sheet material, said first and second sheets being spaced apart a distance greater than the length of the slots, at least first and second elongate spaced-apart, generally parallel pieces of insulating material connecting said first and second sheets together, the spacing between said at least first and second pieces being a multiple of the spacing between the slots, each of said at least first and second pieces having a width adapted for entering one of the slots and overlaying a previously formed portion of one of the phase windings therein whereby a subsequently formed portion of another of the phase windings in the one of the slots will be insulated from the previously formed portion, said first and second sheets being adapted for overlapping previously formed end turn portions of the one phase winding whereby subsequently formed end turn portions of the another phase winding will be insulated from the previously formed end turn portions, opposite ends of each of said at least first and second pieces overlapping each of said first and second sheets, and an ultrasonic weld attaching the overlapped portions of said at least first and second pieces and said first and second sheets, respectively, said ultrasonic weld reducing the thickness of said overlapped portions by an amount which does not impair the insulating qualities of the between-phase insulator.

6. A ladder-like assembly adapted for producing between-phase insulators for insulating different phase windings from one another in a stator of an electric motor with the stator having a plurality of spaced-apart slots therein, the assembly comprising at least first and second generally parallel extending spaced-apart strips of insulating material, a plurality of spaced-apart sheets of insulating sheet material disposed generally transversely to the parallel extent of said at least first and second strips and overlapping each of said at least first and second strips generally between a pair of opposite edges of each of said sheets, said at least first and second strips being spaced apart a distance equal to a multiple of the spacing between the slots, adjacent ones of said sheets being spaced apart a distance greater than the length of the slots, each of said at least first and second strips having a width adapted for entering one of the slots, ultrasonic weld means for connecting together the overlapping portions of said at least first and second strips and said sheets, said ultrasonic weld means reducing the thickness of said overlapping portions by an amount which does not impair the insulating qualities thereof, and each of said sheets and said at least first and second strips being adapted to be severed in the direction generally transverse to the parallel extent of said at least first and second strips whereby, when severed, each adjacent pair of severed sheets connected together by said at least first and second strips forms one of the between-phase insulators.

4,263,476

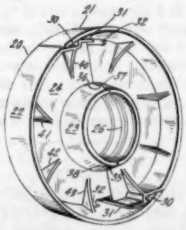
INSULATION SPACER FOR GAS-INSULATED TRANSMISSION LINE WITH IMPROVED OUTER RIM STRUCTURE

Philip C. Netzel, Milmont Park, Pa., assignor to Electric Power Research Institute, Palo Alto, Calif.

Filed Oct. 5, 1979, Ser. No. 82,130

Int. Cl.³ H01B *17/58, 9/04*

U.S. Cl. 174—156 **8 Claims**



1. A support insulator for a flexible gas-insulated cable; said support insulator comprising a molded plastic disk-shaped member having a cylindrical outer rim and a concentric cylindrical inner rim joined together by a relatively thin flat web; said outer rim being adapted to receive an outer flexible conductive housing; said inner rim being adapted to receive a conductor which is to be supported coaxially within said outer flexible housing; and a plurality of circumferentially spaced

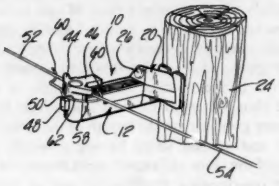
tapered reinforcing ribs disposed perpendicularly to said central web and extending symmetrically about either side of said central web; each of said reinforcing ribs tapering from said central web beginning at a radial distance from said inner rim which is about one-third of the distance between said inner and outer rims; and reinforcing ribs tapering gradually continuously outward to a dimension just less than the length of said cylindrical outer rim at the point where they join the interior surface of said outer rim.

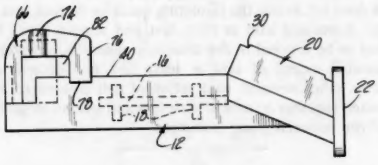
4,263,477

ELECTRIC FENCE INSULATOR

Robert M. Wilson, Sr., Battle Creek, Mich., assignor to Dare Products, Inc., Battle Creek, Mich.

Filed Dec. 26, 1979, Ser. No. 107,362
Int. Cl.³ H01B *17/16, 17/24*
U.S. Cl. 174—158 F **6 Claims**





1. An electric fence insulator for guiding and supporting electric fence wire upon a fence post, said fence insulator comprising an elongated body of electric insulating material, mounting means at one end of said body for mounting said body in an outwardly projecting position upon a fence post, an abutment member fixed on said body and projecting upwardly from said body at the other end thereof, and wing tabs fixedly mounted at the upper end of said abutment member and projecting from said abutment member generally toward said mounting means in a generally parallel vertically spaced relationship to the upper side of said body, said tabs each having a dependent portion extending perpendicularly to the longitudinal axis of said elongated body, said dependent portions being spaced from said abutment means in a direction toward said mounting means and having their points of termination below the plane defined by the upper surface of said elongated body.

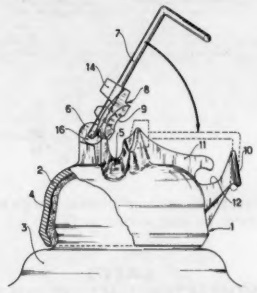
4,263,478

INSULATOR EQUIPPED WITH A DEVICE FOR FIXING A BARE CABLE THERETO

Michel Willem, Vichy, France, assignor to Societe Anonyme dite: Ceraver, Paris, France

Filed May 4, 1979, Ser. No. 36,018
Claims priority, application France, May 18, 1978, 78 14720
Int. Cl.³ H01B *17/22*
U.S. Cl. 174—169 **11 Claims**

1. An insulator equipped with a device for fixing a bare cable thereto, said device comprising a fixed part integral with the insulator and a moving part connected to the fixed part, said fixed part having a groove which forms a cradle adapted to hold a cable and said moving part adapted to clamp a cable in a locked position in said cradle, wherein the fixed part and the moving part have contact surfaces such that a cable in contact therewith in the locked position is subjected to progressive deformation of its cross-section in a first direction substantially



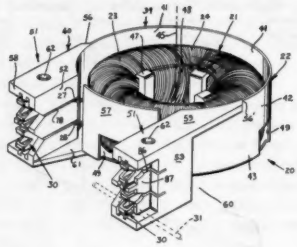
perpendicular to the direction which corresponds to the clamping of the moving part at the central portion of the cradle and in a second direction substantially perpendicular to the first direction at the two ends of the cradle.

4,263,479

TERMINATED INDUCTIVE COIL ASSEMBLY

Glenn E. Lange, Omaha, and Dennis M. Lynch, LaVista, both of Nebr., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,197
Int. Cl.³ H01F *17/08, 27/06*
U.S. Cl. 178—46 **15 Claims**

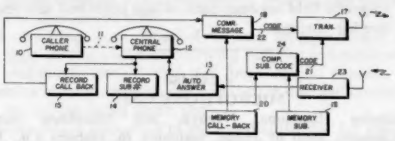


1. A terminated inductive coil assembly, which comprises:
a housing which includes;
a first portion having a cavity for receiving a toroidal core, said portion having at least one open end and another end which is oppposite to said open end, said open end adapted to receive a toroidal core; and
a second portion which includes at least one arm having one end that is connected to and that extends from said first portion and another free end having a contact element-receiving nest formed therein, said at least one arm extending from said first portion between two planes which are parallel to planes through said open end and said other end of said first portion:
a coil received in said cylindrical cavity and having at least one winding with leads extending from the winding; and
a contact element which is mounted in each of said nests for receiving and making electrical engagement with one of said leads of said coil and with an associated external conductor.

4,263,480
PAGER RECEIVER

Alfred B. Levine, 2924 Terrace Dr., Chevy Chase, Md. 20015

Filed Jul. 17, 1979, Ser. No. 58,250
Int. Cl.[3] H04M *11/00*
U.S. Cl. 179—2 EC 11 Claims

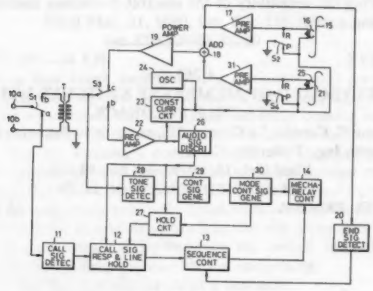


11. In a pager system having incoming telephone lines, a transmitter station, and plural receivers, a memory bank at the transmitter for storing the unique address code numbers of few digits assigned to each different receiver and associating said unique address codes with unique telephone numbers of a greater number of digits associated with each of said plurality of receivers, an additional memory bank for a plurality of fixed content messages associated with each different one of said receivers and a corresponding unique message code of fewer digits for each of said fixed content messages, automatic means at said station for responding to a received digital number over the telephone line to select from said memory bank and to transmit the unique address code corresponding to said number, and said automatic means responding to a subsequent received digital number over that telephone line to select from said additional memory bank a corresponding message code and transmit said code, and said receivers selectively responding to a unique address code to activate a selected receiver and the activated receiver responding to a received message code to retrieve and communicate a previously stored unique message in said selected receiver corresponding to the unique message code received.

4,263,481
AUTOMATIC TELEPHONE ANSWERING AND RECORDING APPARATUS

Charles W. Ho, Lafayette, Calif., and Tohru Takahashi, Tokyo, Japan, assignors to Dictran International Corp., South San Francisco, Calif. and Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 8, 1978, Ser. No. 958,727
Claims priority, application Japan, Nov. 10, 1977, 52-135180
Int. Cl.[3] H04M *1/64*
U.S. Cl. 179—6.14 5 Claims



1. An automatic telephone answering and recording apparatus comprising:

a first cassette tape on which a specific answering message content has previously been recorded;

means operating in response to call signals sent by a caller to close the speaking circuit of an associated telephone set and to carry out telephone line connection;

answering means for reproducing said answering message content through the telephone line to the caller;

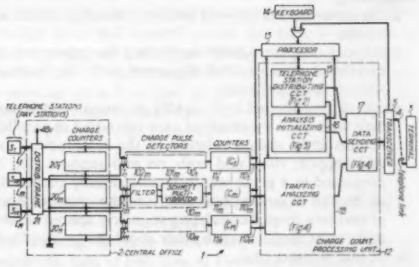
a second cassette tape which is still unrecorded; and

incoming message recording means for recording on the second cassette tape an incoming message content sent through the telephone line from the caller, said telephone line connection means comprising a circuit for detecting call signals, means for counting the number of call signals thus detected, means for discriminating the existence or nonexistence of audio signals of an incoming message arriving through the telephone line, holding means, which selectively assumes a reset state and a set state, for memorizing the existence of audio signals by assuming the set state, said existence being discriminated by the discriminating means after the apparatus and the holding means are reset, and means for connecting the telephone line in responsive accordance with the state of the holding means and with the result of the counting of the number of call signals, said telephone line connection means operating to carry out the line connection in response to a first specific number of call signals from the caller when the holding means assumes the set state and in response to a second specific number of call signals differing from the first specific number of call signals when the holding means assumes the reset state.

4,263,482
PUBLIC TELEPHONE STATION TRAFFIC ANALYZING ARRANGEMENT

Bernard M. Serres, 51, av. de la Paix, Fresnes, France (94260); Maurice S. Viale, 174, Bd Jean Mermoz, Chevilly-la-rue, France (94150), and Edouard J. Jewiarz, 13, route de l'Abbaye, Gif-sur-Yvette, France (91160)

Filed Mar. 13, 1979, Ser. No. 20,188
Claims priority, application France, Mar. 14, 1978, 78 07329
Int. Cl.[3] H04M *3/24*
U.S. Cl. 179—6.3 R 5 Claims



1. A traffic analysing arrangement for public telephone stations which are served from a telephone exchange equipped to transmit charging pulses to said telephone stations through telephone subscriber's lines, said arrangement comprising:

means connected in parallel to each telephone line or telephone line input means of said telephone exchange for detecting charging pulses during telephone calls requested by a telephone station connected to said telephone line;

means connected to said charging pulse detecting means for periodically counting the number of detected charging pulses during a predetermined observation period allocated to said telephone station;

time recording data delivering means for periodically reading-out the charging pulse number in said counting means and for resetting said counting means after said predetermined observation period;

means connected selectively to said charging pulse counting

means for comparing said charging pulse number to at least two predetermined charging pulse number values specific to said telephone station at the end of each predetermined observation period allocated to said telephone station; and

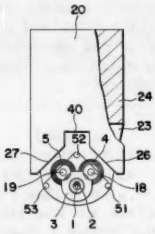
coding means connected to said comparing means for producing a coded signal indicating an operation failure of said telephone station when the charging pulse number is greater than one or less than the other of said predetermined charging pulse number values specific to said telephone station.

4,263,483

MOVING COIL PICK-UP ASSEMBLY FOR USE IN A RECORD PLAYER

Shuichi Obata, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 29, 1978, Ser. No. 938,308
Claims priority, application Japan, Sep. 1, 1977, 52-105534
Int. Cl.³ H04R 9/16
U.S. Cl. 369—139 **10 Claims**



1. A pick-up assembly for use in a record player for reproducing monophonic or stereophonic audio information carried in a groove formed in a record disc, said pick-up assembly comprising;

a cantilever having one end portion thereof provided with a stylus;

a support ring for tightly supporting the other end of the cantilever in substantial alignment with the longitudinal axis of said cantilever;

a pair of ring-shaped coils rigidly mounted on said support ring with their longitudinal axes extending in parallel and equidistantly spaced relation to the longitudinal axis of said support ring, said coils on said support ring being contained in a plane which is substantially perpendicular to the axis of said support ring, and the respective centers of said ring shaped coils being angularly spaced at substantially right angles to each other about the longitudinal axis of said support ring;

a damper means located on the side of said ring shaped coils opposite to said cantilever and coaxial with said supporting ring;

a supporting means located on the side of said damper means oppposite to said ring shaped coils for supporting said support ring and a pair of poles having a circular cross-section and being made of magnetic material and each having the end portion coaxially inserted into corresponding ones of said pair of coils, and said damper means interposed between said support means and said support ring, for causing said coils to vibrate approximately about a point of intersection of the longitudinal axis of said support ring with said plane in response to a vibration of said cantilever caused by a movement of said stylus;

a first yoke member located above said ring shaped coils having a pair of leg portions depending from said first yoke member, said leg portions being positioned outside said pair of poles and spaced from said coils for forming a magnetic gap having a predetermined size between each of said respective leg portions and said poles, said first yoke member having a recess therein which is located above said stylus substantially in alignment with said coils in the direction transverse to said cantilever for increasing separation of said stereophonic audio information; and

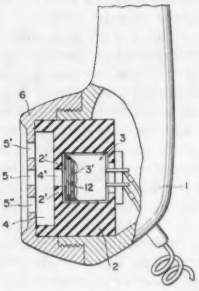
a permanent magnet means for magnetizing said leg portions in one of the magnetic polarities and for magnetizing said poles in the other magnetic polarity for establishing a magnetic field between each of said poles and said respective leg portions.

4,263,484

MICROPHONE UNIT

Yoshinobu Hisatsune, Nagoya, and Masaharu Suzuki, Mizunami, both of Japan, assignors to Aiphone Co., Ltd., Japan

Filed May 8, 1978, Ser. No. 903,792
Claims priority, application Japan, Dec. 30, 1977, 52-160460
Int. Cl.³ H04R 19/04
U.S. Cl. 179—111 E **3 Claims**



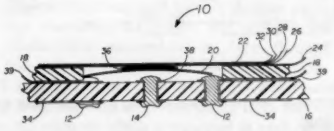
1. In a telephone transmitter having a mouthpiece with a plurality of apertures formed therein and including an electret condenser microphone comprising a vibrating membrane and a resonance cavity located within said transmitter, the improvement comprising a second cavity located between said mouthpiece and said electret condenser microphone, said second cavity having a cross-sectional area which is larger than the cumulative total of the cross-sectional areas of said apertures and having a volume which is larger than the cumulative total volume of said apertures whereby the speed of an air stream entering said second cavity through said apertures is substantially decreased in said second cavity thereby substantially reducing the sensitivity of the electret condenser microphone of wind noise.

4,263,485

KEYBOARD OF MEMBRANE SWITCHES WITH TACTILE FEEDBACK

William C. Corwin, La Grange, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 15, 1979, Ser. No. 84,936
Int. Cl.³ H01H 3/12, 9/04, 13/06
U.S. Cl. 200—5 A **5 Claims**



1. A keyboard type switch comprising:

support means for providing a mounting surface;

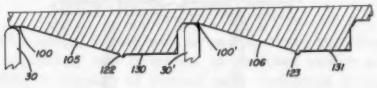
first electrical contact mounted on said support means;
second electrical contact mounted on said support means;
domed shaped conductive disc having a first state for establishing an electrical conductive path between said first electrical contact and said second electrical contact and a second state for providing an open circuit between said first and said second electrical contact and providing tactile feedback when transitioning between said first state and said second state;
an insulating layer mounted on said support means, said layer having a hole for receiving said disc and maintaining said disc in contact with said first electrical contact;
laminar means covering said conductive disc and connected to said insulating layer; and
spacer means connected to said conductive disc for amplifying tactile feedback from said conductive disc.

4,263,486

ROTARY OPERATOR

Glenn R. Taylor, 108 Duncan Cir., Beaver, Pa. 15009

Continuation-in-part of Ser. No. 13,665, Feb. 21, 1979, and a continuation-in-part of Ser. No. 13,664, Feb. 21, 1979. This application Feb. 23, 1979, Ser. No. 14,564
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—17 R **5 Claims**



1. In a rotary operator for use in controlling electrical contact blocks having a projection therein for engagement with the operator which includes a housing and a rotatable stem assembly within said housing, the stem assembly having a means for controlling rotation of the stem and a surface for engagement with the projection, the improvement in the surface for engagement with the projection comprising:
an annular camming surface having at least one high dwell portion and at least one low dwell portion, said high dwell portion and said low dwell portion being connected by a ramp and a bump raised above the high dwell portion proximate the intersection of the high dwell portion and the ramp.

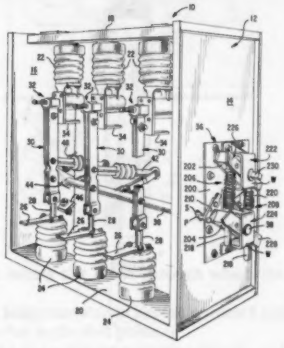
4,263,487

AIR SWITCH

Clarence L. Welter, and Stephen R. Riggens, both of Birmingham, Ala., assignors to Electrical Equipment, Inc., Birmingham, Ala.

Filed Mar. 31, 1980, Ser. No. 135,489
Int. Cl.³ H01H *31/00*
U.S. Cl. 200—48 KB **3 Claims**

1. In a load break switch having stationary and movable interengageable contact means, means including an axially rotatable drive shaft for driving the movable contact means between a switch closed position wherein the movable contact means and the stationary contact means are engaged and a switch opened position wherein the movable contact means and stationary means are disengaged, and mechanical operator means for imparting relatively short duration and high level rotational force to said drive shaft to thereby drive said movable contact means rapidly between the switch opened and closed positions, said operator means comprising:
an arming lever rotatable about a first axis;
a load release lever rotatable about a second axis and operatively connected to said drive shaft, said second axis being disposed in spaced parallel relation to said first axis and jointly therewith defining a plane;
first and second compression springs each connected in uni-directional force transmitting relation between the arming and release levers and respectively disposed on opposite sides of said plane, both said springs being substantially uncompressed upon said movable contact means being located at the switch closed and opened positions;
first latch means for locking said load release lever against rotation upon initiation of rotation of said arming lever in a first direction thereby effecting compression of the first of said compression springs, said first latch means being responsive to predetermined rotational travel of said arming lever in said first direction to release said load release lever and permit the same to rotate in a first direction under the action of the first of said compression springs, whereby said rotational force is applied to said drive shaft to drive the movable contact means from the switch closed position to the switch opened position; and



second latch means for locking said load release lever against rotation upon initiation of rotation of said arming lever in a direction opposite said first direction thereby effecting compression of the second of said compression springs, said second latch means being responsive to predetermined rotational travel of said arming lever in said direction opposite said first direction to release said load release lever and thereby permit the same to rotate in a direction opposite said first direction under the action of the second of said compression springs, whereby said rotational force is applied to said drive shaft to drive the movable contact means from the switch opening position to the switch closed position.

4,263,488

PNEUMATIC SPRING INCLUDING AN ELECTRIC SWITCH

Herbert Freitag, Koblenz-Metternich, and Klaus Schnitzius, Rheinbrohl, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

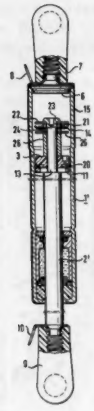
Continuation of Ser. No. 804,316, Jun. 7, 1977, abandoned. This application May 16, 1979, Ser. No. 39,269
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703236
Int. Cl.³ H01H *3/00;* **F16F** *9/50*
U.S. Cl. 200—52 R **22 Claims**

1. In a pneumatic spring including a cylinder member having a closed end wall and an apertured end wall and defining a sealed cavity therein, a piston rod member axially movable into and out of said cavity through said apertured end wall, a piston assembly carried by said piston rod member for axial movement within said cavity, a pressurized body of electrically nonconductive fluid within said cavity, first and second electrical contacts carried by said cylinder member and said piston rod member, respectively, within said cavity, first and second electrical terminals mounted on the cylinder member and the piston rod member, respectively, outside said cavity, first and second conductive means for connecting said first and second

terminals to said first and second contacts, respectively, and first and second fastening means carried by the cylinder member and the piston rod member, respectively, outside said cavity for mounting the spring to respective objects, the improvement comprising:

the inner wall of said cylinder member being electrically conductive and defining said first electrical contact;

said second electrical contact comprises an electrically conductive element carried by said piston rod member and extending radially therefrom for engagement with said first electrical contact;



means for interrupting, at least at one portion of the stroke of the piston rod member within the cylinder member, at least one of (1) the electrical connection between said first and second contacts, (2) the electrical connection between said first terminal and said first contact, and (3) the electrical connection between said second terminal and said second contact, whereby an electrical conductive path is established through the spring over a portion of the stroke of the piston rod member and is interrupted at said at least one portion thereof; and

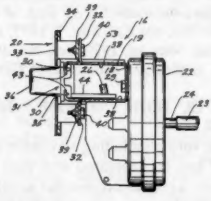
means for insulating said piston rod member from said apertured end wall of said cylinder member.

4,263,489

SWITCH ADJUSTMENT MECHANISM

Richard P. Bergeson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Sep. 4, 1979, Ser. No. 72,090
Int. Cl.[3] H01H *35/34*
U.S. Cl. 200—81 R **12 Claims**



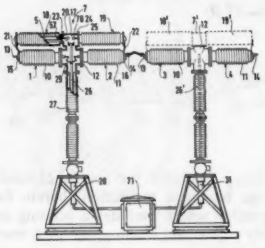
1. An adjustable pressure responsive switch assembly, the combination comprising: a pressure actuated switch mechanism; an adjustable element on said switch mechanism for effectively varying the relative pressure at which said switch mechanism will actuate; bracket means supporting said switch mechanism and including elongated enclosing structure having one substantially open side defining an elongated guideway operatively juxtaposed to said adjustable element; an elongated unitary slider member movable within said guideway and including cam means for engaging with and effecting movement of said adjustable element to vary the adjustment of said switch mechanism as said slider member is moved; and means mounting said unitary slider member within said guideway of said bracket means including a pair of spaced apart elongated rails on and extending the length of one of said bracket means and slider member and mating with a pair of elongated grooves formed in and extending the length of the other of said bracket means and slider member, said unitary slider member being manually operable for sliding movement relative to said guideway to effect said adjustment of said switch mechanism.

4,263,490

DEVICE FOR SWITCHING IN CLOSING RESISTORS FOR HIGH-VOLTAGE CUT-OUT SWITCHES

Doan Pham Van, Meyzieu, France, assignor to Delle-Alsthom, Villeurbanne, France

Filed Aug. 11, 1978, Ser. No. 932,970
Claims priority, application France, Aug. 24, 1977, 77 25777
Int. Cl.[3] H01H *33/16*
U.S. Cl. 200—144 AP **12 Claims**



1. A high-voltage cut-out switch for opening and closing a circuit, said cut-out switch comprising:

at least two series disposed main chambers housing separable fixed and movable main contacts,

a rod mounted for reciprocation and interposed between said main chambers,

auxiliary insulative chambers extending parallel to said at least two series disposed main chambers on opposite isdes of the path of movement of said rod,

a closing resistor in each of said auxiliary chambers, stationary contacts connected to said closing resistors, a moving bridge carried by said rod and bearing moving contacts for bridging said stationary contacts to connect said resistors in series and for shunting said resistors across said main contacts, and

means for connecting said resistors in series and shunted across the main contacts prior to closure of the main contacts and for keeping the resistors out of the circuit during opening of said main contacts,

the improvement comprising:

a linkage connecting said rod to said moving main contacts to effect closing and opening of said main contacts,

an intermediate chamber positioned intermediate of said auxiliary insulative chambers,

said intermediate chamber bearing said stationary contacts for connecting the closing resistors in series,

said moving bridge being disposed within said intermediate chamber and being mounted to said rod for movement independent of said rod, and

means for effecting initial movement of said rod in a given direction for effecting closure of said bridge carried moving contacts onto said stationary contacts for inserting the resistance in the circuit during closure and for operating said linkage to subsequently close said main contacts to short said resistors and for moving said bridge away from

said stationary contacts during continued movement of said rod in said given direction.

4,263,491

METHOD FOR CHECKING ELECTRIC CONTACTS OF AN ENCLOSED-TYPE SWITCHING DEVICE AND AN AUXILIARY APPARATUS FOR USE WITH THE SWITCHING DEVICE TO USE THE METHOD

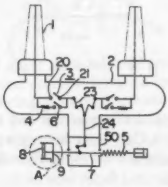
Masaki Murashita, Hitachi; Seizo Nakano, Mito; Hiroshi Itoh; Shigeo Shiono, both of Hitachi, and Takeshi Takahashi, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 23, 1978, Ser. No. 889,535

Claims priority, application Japan, Mar. 31, 1977, 52-35351

Int. Cl.³ H01H *9/00, 33/12*

U.S. Cl. 200—146 R **6 Claims**



4. In a system for use with an enclosed-type switching device comprising two terminals, an enclosed switch section including a plurality of contact pairs connected in parallel between said terminals and each changeable from open to closed state, and control means including a movable member mechanically connected to said contact pairs and movable to cause said contact pairs to sequentially change from open to closed state,

the improvement of an auxiliary apparatus comprising,

movable member driving means removably mounted to said movable member and capable of moving said movable member along the same path as the path of movement thereof for the sequential change of the states of said contact pairs and of stopping said movable member selectively at any position of said path, said driving means including a rotary rod rotatably screwed to said movable member and having an end portion which is capable of being positionally fixed, and a handle for manually rotating said rotary rod, and

means for detecting the position of said plurality of contact pairs including an index fixed to one of said rotary rod and said movable member and placed opposingly to part of the other of said rotary rod and said movable member and a plurality of position marks provided on said part of the other of said rotary rod and said movable member.

6. An auxiliary apparatus according to claim **1** or **4**, wherein said plurality of contact pairs include main contacts and arc-breaking contacts which are closed prior to closing of said main contacts in closing operation of said switching device.

4,263,492

CIRCUIT BREAKER WITH ANTI-BOUNCE MECHANISM

Alfred E. Maier, Beaver Falls, and James R. Farley, Plum, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1979, Ser. No. 77,530

Int. Cl.³ H01H *3/60*

U.S. Cl. 200—288 **5 Claims**

1. A circuit breaker comprising:

(a) stationary contact means;

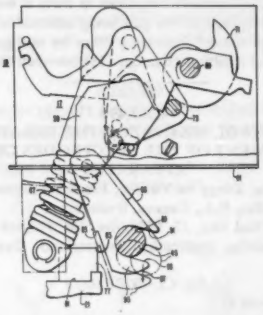
(b) movable contact means operable between open and closed positions of the stationary contact means;

(c) contact arm means for supporting the movable contact means and pivotally mounted for movement of the contact between said position;

(d) a cross bar operatively connected to the contact arm means and movable between first and second positions corresponding to the open and closed positions;

(e) a circuit breaker operating mechanism releasable to effect movement of the contact arm means and comprising a link connected to the cross bar;

(f) means for preventing bouncing of the cross bar from the first to the second position after moving to said first position and comprising a stop member;



(g) the link having slot means through which the cross bar extends;

(h) the link being movable to a more retracted position than the cross bar in the first position;

(i) the link having a portion extending into the path of travel of the cross bar; and

(j) and the link having a strike surface engageable with the stop member as the cross bar moves from the first to the second position when the link is in the fully retracted position so as to prevent the cross bar from bouncing back to the second position.

4,263,493

SPARK EROSION CUTTING APPARATUS WITH CONTROLLED FLUSHING MEDIUM FLOW

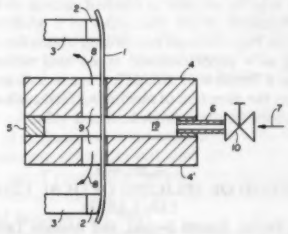
Beat Kilcher, Ascona, Switzerland, assignor to A.G. für industrielle Elektronik AGIE, Losone, Switzerland

Filed Oct. 25, 1978, Ser. No. 954,638

Claims priority, application Switzerland, Apr. 18, 1978, 4136/78

Int. Cl.³ B23P *1/00*

U.S. Cl. 219—69 W **3 Claims**



1. Apparatus for machining of workpiece by spark-erosion cutting with a wire electrode (**1**) and supplying a flushing medium to the machining area from one side of the workpiece, so that the flushing medium flows in a controlled manner in one direction through the machine in an area comprising a pair of flat members (**4**, **4'**);

a gasket ring (5) spacing said members from each other, at least one of said members forming the workpiece, the space between the members free from the gasket ring defining a flushing chamber (19);

means (2, 3) guiding the wire electrode (1) to pass through the flushing chamber;

means (6, 7) supplying a flushing medium under pressure to the chamber;

and means (10) controlling the flow of the pressurized flushing medium to the chamber, and hence the flow of the medium from the flushing chamber out through the workpiece adjacent the wire electrode, wherein both

said members comprise workpieces to form a workpiece pair (4, 4'), the workpieces of the pair being substantially parallel to each other and spaced from each other by said gasket ring (5) to provide said flushing chamber (19) between them.

4,263,494
CONTROL MEANS FOR THE RELATIVE DISPLACEMENT OF THE ELECTRODES OF AN EDM APPARATUS

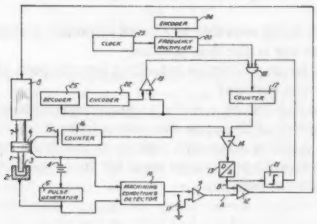
Roland Martin, Dingy en Vuache, France, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Dec. 27, 1978, Ser. No. 973,568

Claims priority, application Switzerland, Dec. 29, 1977, 16175/77

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 G **6 Claims**



1. In an EDM apparatus comprising means for controlling the relative displacement of machining feed of an electrode workpiece and of an electrode tool wherein the electrodes are displaced relative to each other along a predetermined axis by means of a servo-motor at a speed controlled by a first signal as a function of the machining conditions and by a second signal as a function of the difference between the relative position of said electrodes in said direction and a reference position, said second signal being opposed to said first signal when said reference relative position is reached such as to limit the relative displacement of the electrodes to a predetermined final position, the improvement comprising means for automatically displacing at a predetermined speed said reference relative position as a function of said difference in a direction which is the same as the direction of machining feed such as to maintain said difference below a predetermined value.

4,263,495
METHOD OF SPLICING OPTICAL FIBERS BY CO_2-LASER

Hiroyuki Fujita; Yasuzi Suzaki, and Atsushi Tachibana, all of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 721,488, Sep. 8, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,757

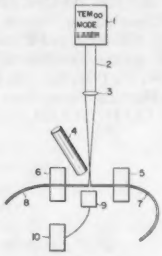
Claims priority, application Japan, Sep. 10, 1975, 50-10934

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LD **14 Claims**

1. Method of joining together at least two optical fibers of fused silica having a diameter of no more than 300 microns, the method comprising the steps of:

placing the optical fibers in alignment such that end surfaces of each of the optical fibers are opposed in spaced relation at a distance which enables a contact of the end faces upon a thermal expansion of the optical fibers, and



irradiating the optical fibers at the end faces by a focussed laser beam from a CO_2-laser having a power output of no more than 2 watts for no more than 20 seconds, to thermally expand the end faces into contact and fuse the end faces together, the focussed laser beam having a diameter larger tha that of the optical fibers.

4,263,496
METHOD OF WELDING BY ELECTRON BEAM

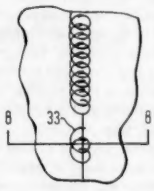
Tony Medlar, Colne, England, assignor to Rolls-Royce Limited, London, England

Filed May 29, 1979, Ser. No. 43,422

Claims priority, application United Kingdom, Jun. 16, 1978, 27094/78

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 ED **5 Claims**



1. A method of electron beam butt welding to edges of a nickel base alloy part comprising the steps of:

moving the electron beam so that its point of incidence with the plane of the weld follows a generally circular path;

simultaneously causing a relative linear movement between the beam and butt joint; and

simultaneously pulsing the electron beam at a frequency insuring that each pulse of the electron beam overlaps an area of metal welded by the preceding pulse.

4,263,497
WELDING GUIDE

Artemio S. Cozzini, 3464 N. Dousman St., Milwaukee, Wis. 53212

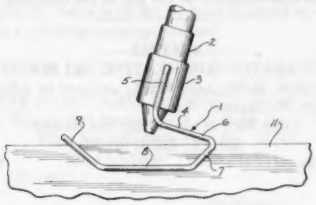
Filed Nov. 20, 1978, Ser. No. 961,968

Int. Cl.³ B23K *9/28, 37/02;* **H05B** *7/10*

U.S. Cl. 219—138 **2 Claims**

1. A welding apparatus for welding a joint extending along an outside corner of a workpiece, comprising, welding nozzle to feed a welding wire toward the workpiece, a collar to be

attached around said nozzle, a pair of wire form legs extending downwardly from opposite sides of the collar, each leg including a rearwardly extending section and a elongated generally straight guide section connected to the rearwardly extending section and extending forwardly therefrom, and an upwardly inclined laterally extending tip section connecting the forward



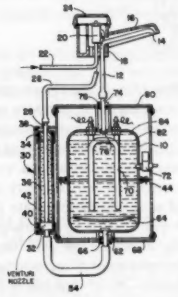
ends of th elongated guide sections, said guide sections extending both forwardly and rearwardly with respect to said collar, said guide sections being generally parallel to each other and disposed to ride on the workpiece on opposite sides of said joint to thereby maintain the welding apparatus in alignment with said joint and to obtain a more uniform weld.

4,263,498

EXPANSION CHAMBER ARRANGEMENT FOR WATER HEATING AND DISPENSING DEVICE

Theodore F. Meyers, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Feb. 26, 1979, Ser. No. 15,183
Int. Cl.³ F24H *1/20*; B67D *5/62*
U.S. Cl. 219—312 **3 Claims**



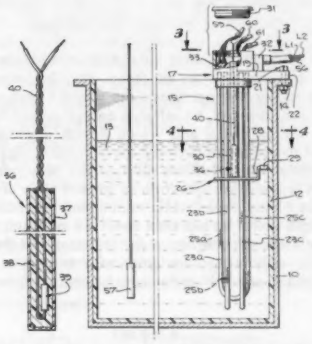
1. A hot water heating and dispensing device, comprising:
a tank forming a hot water container;
heating means in said tank for heating water placed therein;
control means for operating said heating means;
an outlet conduit in the top of said tank providing an exit path for water contained therein for dispensing the same;
an inlet conduit opening into a lower portion of said tank for suppling water thereto;
valve means connected to said inlet conduit for controlling the flow of water into and out of said tank;
reservoir means for receiving water from said tank; and
a venturi nozzle connecting said reservoir with said inlet conduit between said valve means and said tank;
said reservoir means being in the form of a collapsible cylindrical tube with at least one rigid closure means in an end thereof, said venturi nozzle being formed in said rigid closure means and providing for ingress and egress of water to and from said tube through said inlet conduit from and to said tank;
said tube being movable between a minimum volume and a maximum substantially filled volume such that upon actuation of said valve means water flowing through said inlet conduit from said valve means and passing through said venturi nozzle will cause water to be withdrawn from said collapsible tube through said inlet conduit and into said tank, said tube being disposed below the top of said tank so that upon closing of said valve means to stop water flow through said inlet conduit, the pressure head of water in said tank and said outlet conduit causes water to flow from said tank through said inlet conduit to said collapsible tube to return the same to said maximum volume, said volume being sufficient to reduce the water level in said tank and outlet conduit so as to allow for expansion of water in said tank due to heating by said heating means without dispensing water from said outlet conduit due to expansion.

4,263,499

IMMERSION HEATER WITH THERMAL CUTOFF

Joseph S. Romance, 2867 Shadow Canyon Dr., Diamond Bar, Calif. 91765

Filed Mar. 26, 1979, Ser. No. 23,844
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—331 **9 Claims**



1. An immersion heater for heating a liquid in a tank having a plastic liner on the inner walls thereof, said immersion heater comprising:
a junction box having an extension thereon for mounting on the side of a tank;
a plurality of elongated heater sheaths depending from the bottom of said box, said sheaths having heater coils therein with terminal leads extending up into said junction box; the top end of said coil is spaced below the bottom of said junction box;
a transversely disposed metallic support plate located in the vicinity of the top of the coils in the sheaths and having spaced openings through which said sheaths pass, said support plate having on the end thereof an upright heat reflecting surface with a terminating bumper for contacting the side wall of the tank;
a metallic tube having the bottom thereon attached to the surface of said support plate centrally of said sheaths, said tube extending upwardly into said junction box;
a thermal cutoff removably inserted into the lower portion of said tube and having thermal leads extending upwardly into said junction box; and
quick connectors for connecting the terminal leads of said thermal cutoff in a circuit with other terminal leads in said junction box;
whereby when a liquid level in the tank drops to expose the upper ends of the heater coils in the sheaths the heat generated by the upper ends of the heater coils opens the thermal cutoff and breaks the circuit to thereby protect a

plastic liner on the side wall of the tank adjacent the immersion heater.

4,263,500

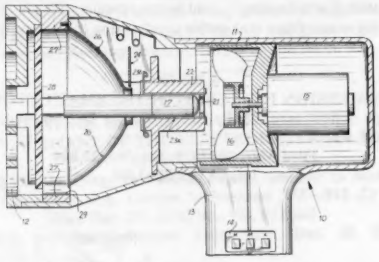
INFRARED HEATING HAIR DRYER

William E. Springer, Bridgeport, and Henry J. Walter, Wilton, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 916,995, Jun. 19, 1978, abandoned. This application May 7, 1979, Ser. No. 36,940

Int. Cl.[3] H05B 3/00

U.S. Cl. 219—377 **6 Claims**



1. An infrared radiation hair dryer comprising a housing with an air inlet and an air outlet, said housing containing therein a motor that operates a fan which blows air from the dryer at low velocity, an infrared energy source between the fan and the air outlet and which directs essentially all its's emissions to a reflector between the infrared energy source and the air outlet which reflects substantially only infrared radiation of a wavelength spectrum of greater than about 0.8 microns out of the dryer while minimizing the reflection of a wavelength spectrum less than about 0.8 microns, and a transparent infrared filter between the reflector and the air outlet that allows only infrared radiation of from greater than about 0.8 microns to about 10 microns to be emitted from the dryer.

4,263,501

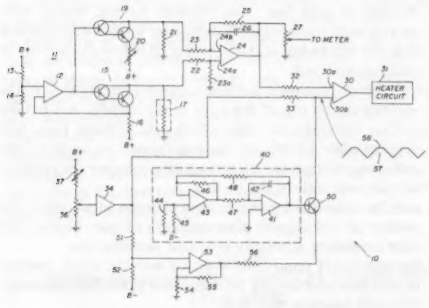
VARIABLE PROPORTIONING CONTROL APPARATUS

Jack L. Wilhelmson, Cheraw, S.C., assignor to Lab-Line Instruments Inc., Melrose Park, Ill.

Filed Feb. 5, 1979, Ser. No. 9,548

Int. Cl.[3] B23K 1/02; G05D 23/00

U.S. Cl. 219—497 **13 Claims**



1. Variable proportioning control apparatus for controlling a device which varies the magnitude of a given characteristic of gas in a chamber, comprising a comparator having an output for operating the device and having first and second inputs, first means for providing a first electrical signal representative of the actual magnitude of the given characteristic of the gas in the chamber and being coupled to said first input, second means for providing a second electrical signal representative of the desired magnitude of the given characteristic of the gas in the chamber and being coupled to said second input, third means for modulating said second electrical signal with a triangular wave, and fourth means for varying the amplitude of said triangular wave in accordance with the desired magnitude of the given characteristic of the gas in the chamber.

4,263,502

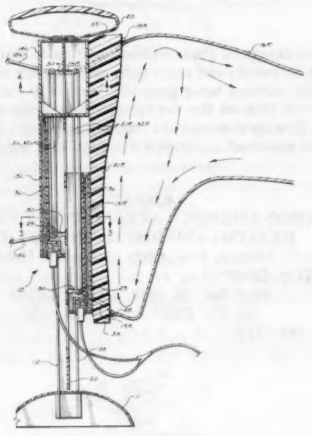
APPARATUS FOR HEATING SKI BOOTS

Donald J. Stern, Bellingham, Wash., assignor to Allsop Automatic, Inc., Bellingham, Wash.

Filed Nov. 16, 1979, Ser. No. 94,824

Int. Cl.[3] H05B 3/06

U.S. Cl. 219—521 **8 Claims**



1. In a boot and shoe tree of the type suitable for storing ski boots and having a base member, support means mounted on said base member and extending vertically upward therefrom, means defining a vertically extending planar toe plate mounted on said support means, means defining a vertically extending planar heel plate mounted on said support means in the same plane as the plane of said planar toe plate defining means, at least one of said toe plate defining means and said heel plate defining means being mounted on said support means with freedom for slideable movement along said support means so as to permit relative movement of said toe plate defining means and said heel plate defining means towards and away from one another, resilient means for normally biasing said toe plate defining means and said heel plate defining means towards one another, toe retainer means mounted on said toe plate defining means for engaging the toe portion of the flat sole of a ski boot and removably clamping the toe portion of the flat sole of the ski boot flat against said toe plate defining means, and heel retainer means mounted on said heel plate defining means for engaging the heel portion of the flat sole of a ski boot and removeably clamping the heel portion of the flat sole of the ski boot flat against said heel plate defining means, whereby the flat sole of the ski boot is firmly and removeably clamped to said co-planar toe and heel plate defining means in abutting engaged surface-to-surface contact therewith for storage in a flat planar condition;

the improvement comprising: heating means mounted in at least one of said toe plate and heel plate defining means for conductively heating the flat portion of the sole of the ski boot which is in surface-to-surface contact with the heated one(s) of said toe plate and heel plate defining means across the entire abutting and engaged surface of

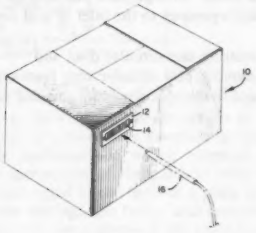
the flat sole portion of the ski boot which is in contact with the heated one(s) of said toe plate and heel plate defining means so as to uniformly and conductively heat the abutting and engaged surface of the flat sole of the ski boot and so as to generate the convective air currents within the interior of the ski boot for convectively heating the entire inner surface of the ski boot while firmly maintaining the flat sole of the ski boot clamped in a flat plane so as to prevent warpage thereof.

4,263,503

BAR CODE LABEL PROTECTION DEVICE

James S. Bianco, 217 Brainard Rd., Enfield, Conn. 06082

Filed Sep. 25, 1979, Ser. No. 78,785
Int. Cl.³ G06K *19/00, 21/06*
U.S. Cl. 235—487 **6 Claims**



1. A device for protection of bar code information comprising

(a) a label containing bar code information; and

(b) a plate adapted to mount said label to an article so that said plate is disposed completely over said label, said plate including

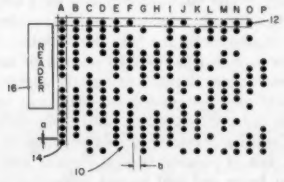
(1) a single slot dimensioned and configured to frame said bar code information and provide a guide surface whereby a reading instrument without the necessity of visual contact with said label may be located to said slot for movement along any of a plurality of paths in the accurate reading of said information.

4,263,504

HIGH DENSITY MATRIX CODE

Jacob E. Thomas, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 1, 1979, Ser. No. 62,650
Int. Cl.³ G06K *7/14, 19/06*
U.S. Cl. 235—454 **8 Claims**



1. A machine-readable code comprising a plurality of dots arranged in rows and columns in x and y directions to form a pattern representing characters in the Y direction and conveying information by presence or absence of a dot at a specific location, said pattern of dots being repeated in the Y direction for reading in a manner wherein the field of view of reading the pattern in the Y direction is less than the repeated pattern for a character.

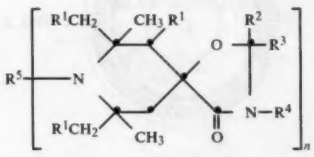
4,263,505

POLYALKYLPIPERIDINE-SPIROOXAZOLONES AND THEIR USE AS LIGHT STABILIZERS

Mario Slongo, Muttenz, and Erwin Nikles, Liestal, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,961
Claims priority, application Switzerland, Mar. 27, 1979, 2826/79
Int. Cl.³ C07D *413/04;* C08K *5/35*
U.S. Cl. 260—45.8 NZ **11 Claims**

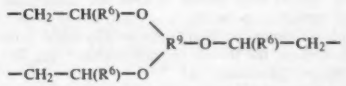
1. A compound of the formula



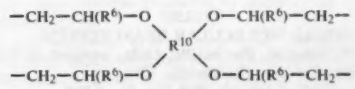
and their acid addition salts, wherein n is an integer from 1 to 4, R^1 is hydrogen or CH_3, each of R^2 and R^3 independently is hydrogen, C_1–C_{18}alkyl, C_6–C_{10}aryl or C_7–C_9aralkyl which is unsubstituted or substituted by chlorine or C_1–C_4alkyl, or R^2 and R^3 together with the carbon atom to which they are attached form a cycloalkane or alkylcycloalkane radical containing 5 to 20 carbon atoms or a polyalkylpiperidine radical, R^4 is hydrogen, C_1–C_8alkyl, allyl, propargyl, glycidyl or C_7–C_9aralkyl which is unsubstituted or substituted by C_1–C_4alkyl, and R^5, if n is 1, is hydrogen, C_1–C_8alkyl, C_3–C_8alkenyl, C_3–C_5alkynyl, C_7–C_9aralkyl which is unsubstituted or substituted by C_1–C_4alkyl, or is a radical $—CH_2—CH(R^6)—OR^7$, wherein R^6 is hydrogen, CH_3, C_2H_5 or phenyl, and R^7 is hydrogen or the acyl radical of an aliphatic, cycloaliphatic or aromatic monocarboxylic acid containing not more than 18 carbon atoms, and, if n is 2, R^5 is 1,4-buten-2-ylene, m- or p-xylylene or a radical of the formula

$$—CH_2—CH(R^6)—O—R^8—O—CH(R^6)—CH_2—$$

wherein R^6 is as defined above and R^8 is the diacyl radical of an aliphatic, cycloaliphatic or aromatic dicarboxylic acid containing 3 to 14 carbon atoms, and, if n is 3, R^5 is a radical of the formula



wherein R^6 is as defined above and R^9 is the triacyl radical of an aliphatic or aromatic tricarboxylic acid containing 4 to 18 carbon atoms, and, if n is 4, R^5 is a radical of the formula



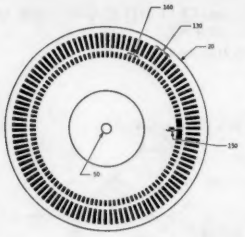
wherein R^6 is as defined above and R^{10} is the tetraacyl radical of an aliphatic or aromatic tetracarboxylic acid containing 6 to 20 carbon atoms, with the proviso that, if R^5 is hydrogen or C_1–C_4alkyl, R^4 cannot be hydrogen.

10. A stabilised plastics material containing 0.01 to 5% by weight of at least one compound of the formula I as claimed in claim **1**.

4,263,506
PULSE GENERATING APPARATUS

Howard C. Epstein, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1978, Ser. No. 971,984
Int. Cl.[3] G01D 5/34
U.S. Cl. 250—231 SE 6 Claims



1. Pulse generating apparatus for a position encoder for generating a pulse at a position, the apparatus comprising:

source means for providing light;

light modulating means having first and second tracks aligned thereon to receive the light for modulating the light as a function of position thereon, the first track having a transmissive section having a first dimension along the length of the track, the second track having a non-transmissive index section having a second dimension, having transmissive sections each having a third arc dimension adjoining the non-transmissive index section on either side, and having a non-transmissive sections having fourth dimensions spaced periodically on either side of the transmissive sections at a period having a fifth arc dimension;

said light modulating means constructed of an optically non-transmissive material and defining holes therein corresponding to the transmissive sections of said first and second tracks;

detector means mounted for movement relative to the light modulating means having first and second optical areas aligned with the first and second tracks respectively and positioned so that the first optical area aligns with the transmissive portion of the first track when the second optical area aligns with the non-transmissive index section of the second track for providing first and second electrical signals in respone to the light received by the first and second optical areas respectively;

said first optical area having a sixth arc dimension; said second optical area having a seventh arc dimension, the seventh arc dimension being substantially equal to the fifth arc dimension, the fourth arc dimensions being less than the fifth arc dimension; and

comparator means coupled to the detector means to receive the electrical signals for generating a pulse in response to the light received at one optical area achieving a predetermined relationship relative to the light received at the other optical area.

4,263,507
DUAL MOLECULAR BEAM SYSTEM

Thomas W. Schmidt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 30, 1979, Ser. No. 7,738
Int. Cl.[3] B01D 59/44; H01J 3/14
U.S. Cl. 250—281 5 Claims

1. Apparatus comprising:

a mass spectrometer having an inlet;

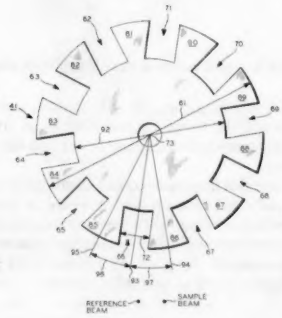
means for directing a first molecular beam toward the inlet of said mass spectrometer;

means for directing a second molecular beam toward the inlet of said mass spectrometer, said first molecular beam originating from a first source, said second molecular beam originating from a second source which is substantially adjacent said first source, said first molecular beam and said second molecular beam converging at the inlet of said mass spectrometer;

a circular disc positioned in the path of said first molecular beam and in the path of said second molecular beam in such a manner that the axis of rotation of said circular disc extends generally in the direction of movement of said first molecular beam and said second molecular beam, said circular disc having a plurality of equally angularly spaced openings therein with respect to the axis of rotation of said circular disc, two of the sides of each of said equally, angularly spaced openings which extend towards the central portion of said circular disc being substantially parallel, said circular disc being aligned so as to alternately pass said first molecular beam and said second molecular beam through said plurality of equally angularly spaced openings to the inlet of said mass spectrometer;

means for rotating said circular disc; and

means for moving said circular disc transversely with respect to said first molecular beam and said second molecular beam so as to vary the position of said first molecular beam and second molecular beam in said plurality of equally angularly spaced openings, said first molecular beam and said second molecular beam being transmitted to the inlet of said mass spectrometer for a longer period of time than the transmission of said first molecular beam and said second molecular beam to the inlet of said mass spectrometer is blocked by the portion of said circular disc between said plurality of equally angularly spaced openings if said first molecular beam and said second molecular beam are passed through each one of said plurality of equally angularly spaced openings at a position near the axis of rotation of said circular disc, said first molecular beam and said second molecular beam being transmitted to the inlet of said mass spectrometer for a shorter period of time than the transmission of said first molecular beam and said second molecular beam to the inlet of said mass spectrometer is blocked by the portion of said circular disc between said plurality of equally angularly spaced openings if said first molecular beam and said second molecular beam are passed through each one of said plurality of equally angularly spaced openings at a position near the periphery of said circular disc.

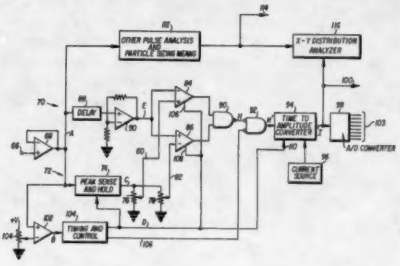


4,263,508

PULSE EDGE MEASUREMENT FOR DETERMINING PARTICLE DIMENSIONAL CHARACTERISTICS

James F. Leary, Rochester, N.Y., and Paul Todd, State College, Pa., assignors to Research Corporation, New York, N.Y.

Filed Apr. 20, 1979, Ser. No. 31,928
Int. Cl.[3] G01N *23/00, 21/64, 15/02*
U.S. Cl. 250—358 R 41 Claims



1. An analyzer adapted for connection to an output of a device of the type which conveys a particle through a beam of electromagnetic radiation and which responds to radiation resulting from interaction of the particle with the beam to output a resultant signal in the form of a pulse as the particle enters and passes through the beam, said analyzer serving to determine a dimensional attribute of the particle and comprising:

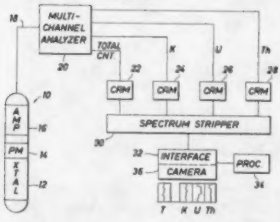
means for measuring pulse edge width between two threshold values on at least one edge of the pulse as an indication of the particle attribute.

4,263,509

METHOD FOR IN SITU DETERMINATION OF THE CATION EXCHANGE CAPACITIES OF SUBSURFACE FORMATIONS

Walter H. Fertl, and David W. Welker, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 26, 1979, Ser. No. 15,538
Int. Cl.[3] G01V *5/00;* E21B *49/02*
U.S. Cl. 250—255 8 Claims



1. A method for determining the cation exchange of earth formations traversed by a borehole, comprising the steps of:

generating signals functionally related to radioactive nuclides occurring naturally in the earth formations surrounding a first borehole;

establishing depth-related cation exchange capacities from core sample taken from said first borehole at preselected depth intervals;

establishing a functional relationship between said generated signals and said cation exchange capacities;

generating additional signals functionally related to radioactive nuclides adjacent subsequent boreholes situated in the same geological region as said first borehole; and

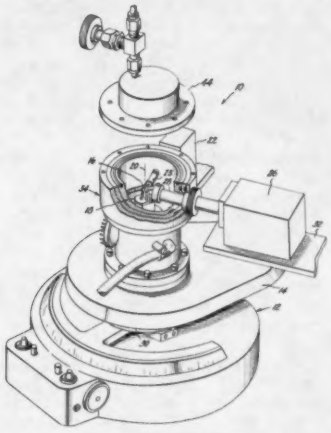
comparing said additional generated signals with said functional relationship established between said generated signals and said cation exchange capacity of said first borehole to determine the depth-related cation exchange capacity of said subsequent boreholes.

4,263,510

COMBINED X-RAY DIFFRACTION AND FLUORESCENCE SPECTROSCOPY APPARATUS WITH ENVIRONMENTALLY CONTROLLABLE CHAMBER

Michael F. Ciccarelli, Troy, and Raymond P. Goehner, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1979, Ser. No. 62,218
Int. Cl.[3] G01N *23/20*
U.S. Cl. 250—272 1 Claim



1. In a scanning X-ray apparatus capable of performing both X-ray diffraction and X-ray fluorescence spectroscopy on a specimen said apparatus comprising:

(A) a goniometer having a first rotatable platform

(B) means supported by the platform for holding the specimen in a position intersected by the axis of rotation of said first rotatable platform,

(C) means for generating X-rays,

(D) a source collimator for collimating the generated X-rays and being so disposed that the collimated X-rays are incident on the specimen in the direction of the axis of said collimator,

(E) detecting means for detecting X-rays reflected from said specimen in response to incidence thereon of said collimated rays, said detecting means terminating at one end thereof in a snout for introducing the reflected X-rays into the detecting means.

(F) a wave-dispersive or energy-dispersive analyzer disposed near the entry end of said snout and operably associated with said detecting means for analyzing both X-ray fluorescent emission and absorption spectra and X-ray diffraction patterns generated by incidence of said collimated rays on

(G) said specimen, first rotating means for rotating said specimen holder such that the specimen rotates relative to the incident X-rays (collimator axis) to a variable angular displacement in the plane containing the collimator axis and perpendicular to said axis of rotation,

(H) means operable in conjunction with such rotation of said specimen holder for concurrently rotating said detector such that said snout rotates relative to said collimator axis to a variable angular displacement 2θ in said plane such that for each value of displacement θ the value of the 2θ displacement is substantially double that of this displace-

ment θ, the improvement wherein said apparatus further comprises in combination with the above, an environmentally controllable chamber for concontrolling the environment in which the specimen is held, said chamber comprising:

(a) a first hollow cylinder defining a cavity within which lies the specimen and the portion of said incident and reflected x-rays at least from the exit of the collimator and at least to the entrance of said snout, said first cylinder being disposed such that its central axis is both perpendicular to said collimator axis and coaxial with said axis of rotation,

(b) a second hollow cylinder surrounding the outer periphery of said first cylinder, disposed closely adjacent thereto and mounted for relative angular displacement therebetween,

(c) a third hollow cylinder surrounding the outer periphery of said second cylinder and disposed closely adjacent thereto and mounted for relative angular displacement therebetween, each of said first, second and third cylinders being disposed coaxially of said rotation axis and coaxially of each other, the axis of each cylinder extending perpendicular to the direction of the axis of said source collimator.

(d) means for air-tight sealing of mutually opposite ends of said cavity, said first cylinder having both (i) a hole extending through the wall thereof, said hole being shaped substantially in the shape of a transverse section of said collimator and bordered by a closed surface of the wall for peripherally engaging said collimator, and (ii) a first slot extending radially through said wall and peripherally therealong, the peripheral extent of said first slot being of an angle equal in value to the angle through which said detector is operably movable, one end portion of said first slot being disposed approximately diametrically from said first hole when said snout is in a first position wherein said snout is approximately coaxially aligned with said collimator and θ is substantially 0°, said θ also being the angle of incidence of the collimated x-rays on said specimen,

(e) means securing said second cylinder to said first platform such that said second cylinder rotates as an integral unit with said specimen holder,

(f) said third cylinder having both (i) a second hole extending through the wall thereof, said hole being shaped substantially in the shape of a transverse section of said snout and bordered by a closed surface of said last-mentioned wall for peripherally engaging said snout and (ii) a second slot extending radially through said last-mentioned wall and peripherally therealong, the peripheral extent of said second slot being equal in angular value to the peripheral extent of said first slot, one end portion (the heading end portion) of said second slot being disposed in radial alignment with said first hole when θ is substantially zero degrees and said snout is in the first position set forth below,

(g) said second cylinder having third and fourth circumferentially spaced-apart slots extending radially through the wall thereof and peripherally therealong,

the peripheral extent of each of said third and fourth slots being of an angle substantially equal in value to half the angle through which said detector is operably movable,

said third slot being radially and peripherally aligned with a portion of said first slot, a trailing end of said third slot being radially aligned with said one end portion of said first slot and with said second hole when said snout is in said first position and θ is substantially 0°, whereby said snout can extend through said second hole and said first and third slots,

a leading end of said third slot being radially aligned with said second hole and with the other end of said first slot when said second cylinder and said snout are rotated to a second position wherein said snout is angularly displaced from said first position by the maximum angular amount permitted by said first slot,

said fourth slot being radially and peripherally aligned with a portion of said second slot, a leading end of said fourth slot being radially aligned with said first hole and with said leading end of said second slot when said snout is in said first position and θ is substantially zero degrees, whereby said collimator can extend through said first hole and said second and fourth slots,

(h) means for placing said cavity in flow communication with a source of inert gas or with a vacuum drawing source such that said cavity can be substantially filled with said inert gas or be substantially evacuated to environmentally control the X-ray path,

(i) means for gas tightly sealing each of said cylinders to its adjacent cylinder or cylinders, and

means for rotating said third cylinder relative to said axis of rotation such that said third cylinder rotates as an integral unit with said snout.

4,263,511

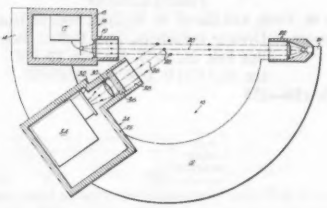
TURBIDITY METER

Joseph G. Hirschberg, Coral Gables, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed Dec. 29, 1978, Ser. No. 974,313

Int. Cl.[3] **G01N** *21/26*

U.S. Cl. 250—343 **7 Claims**



1. A submersible turbidity meter for continuously monitoring the quality of a large body of water over a substantial length of time comprising

an open frame for mounting the components of said meter, said frame allowing the free flow of water therethrough;

a pulsed infrared laser means mounted on said frame for providing a pulsed collimated beam of infrared radiation;

a direct beam detector means oppositely mounted on said frame which is configured and aligned to receive said collimated beam of infrared radiation from said laser, and

at least one scattered beam detector means secured to said frame which is movably adjusted on said frame so as to receive scattered radiation at any desired angle to said beam;

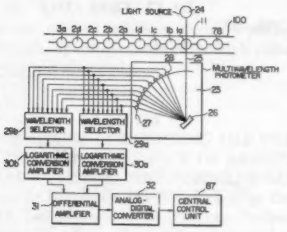
whereby the amount of infrared radiation scattered by particles present in said body of water can be monitored and recorded without daylight interference and with an infrared laser means which is an efficient energy source over a period of time during which the water can be subject to varying conditions.

4,263,512

COLORIMETRIC METHOD FOR LIQUID SAMPLER INCLUDING DISTURBING CHROMOGENS

Hisayuki Sagusa, Katsuta; Yasushi Nonura, Mito, and Ryohei Yabe, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1978, Ser. No. 956,354
Claims priority, application Japan, Oct. 31, 1977, 52-129602; Nov. 11, 1977, 52-134600
Int. Cl.[3] G01N *21/33*
U.S. Cl. 250—373 12 Claims



1. Colorimetric method for liquid samples including disturbing chromogens, using a spectrometer capable of extracting a monochromatic light from ultraviolet and visible wavelength bands, which comprises the steps of:

obtaining a liquid sample including a reaction product with regard to a test item and disturbing chromogens, in which the light absorption of the liquid sample, aside from the light absorption by said disturbing chromogens, occurs in the ultraviolet wavelength band and not substantially in the visible wavelength band;

radiating light to said liquid sample, detecting intensity of transmission light on the basis of a monochromatic light absorbed at a long wavelength region of the visible wavelength band in which the absorption is due to chyle without substantially any absorption due to hemolysis or icterus, a monochromatic light absorbed at a middle wavelength region of the visible wavelength band in which the absorption is due to chyle and hemolysis without substantially any absorption due to icterus, and a monochromatic light absorbed at a short wavelength region of the visible wavelength band in which the absorption is due to hemolysis, icterus and chyle, and obtaining absorbances corresponding to said intensity of transmission light of said respective monochromatic lights;

determining degree of chyle of said liquid sample from the absorbance in the long wavelength region;

determining degree of hemolysis of said liquid sample from a value obtained by correcting the absorbance in the middle wavelength region by the degree of chyle;

determining degree of icterus of said liquid sample from a value obtained by correcting the absorbance in the short wavelength band by the degree of chyle and the degree of hemolysis;

measuring absorbance of said liquid sample at a suitable wavelength of said ultraviolet wavelength band so as to determine a measured value of said reaction product with regard to the test item; and

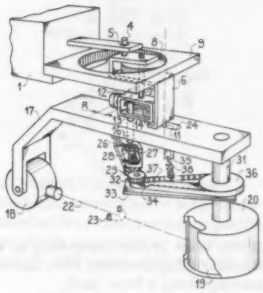
correcting said measured value of said test item by the degree of chyle, the degree of hemolysis and the degree of icterus so as to determine a corrected value.

4,263,513

APPARATUS FOR PANORAMIC RADIOGRAPHY

Jean-Noel Palluet, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

PCT No. PCT/FR78/00011, § 371 Date Mar. 26, 1979, 102(e) Date Feb. 28, 1979, PCT Pub. No. WO79/00065, PCT Pub. Date Feb. 22, 1979.
This PCT application filed Feb. 28, 1979, Ser. No. 24,182
Int. Cl.[3] G03B *41/16*
U.S. Cl. 250—439 P 7 Claims



1. In an apparatus for panoramic radiography containing, on a stand (1), a motor reduction gear device driving a primary axle (4) in rotation around itself, this axle (4) driving in its turn, in rotation around itself, a secondary axle (7) which is parallel to it and carries a toothed satellite pinion (8) which, when the secondary axle moves, engages inside a fixed toothed crown (9) at their tangent point, a third axle (16), parallel to the other two, being fixed to the secondary axle in such a way as to be at a predetermined distance R from said secondary axle, so that third axle (16) moves along an ellipse (E) when primary axle (4) is operated, the value of said distance R defining the shape of said ellipse, this third axle (16) sustaining an oscillating arm (17) having at one of its ends, an X-ray source (18) which emits a collimated X-ray beam (22) towards a film-holder (20) fixed to the other end of the arm, said film-holder (20) having a slot exposed to the X-ray beam and a device for displacing the film (19) behind said slot in said film-holder according to the arm (17) movements, the improvement consisting in that:

the diameter of said fixed toothed crown (9) is double that of said satellite pinion (8) so that, when said primary axle (4) makes a full turn around itself, said satellite pinion (8) makes two turns in said fixed crown (9);

said arm (17) is mounted free on said third axle (16) which thus drives said arm in its elliptical movement without determining its direction, said arm being rotatable about said third axle (16) which constitutes its rotation axis;

and the longitudinal direction of said arm (17), and consequently the direction of said X-ray beam, is controlled by an auxiliary controlling device having coupling means (11) linked to said primary axle (4) so that it rotates with it and penetrating in an elongated slot (24) of said arm (17), said slot (24) being parallel to the longitudinal axis of said arm and aligned with its rotation axis, and said coupling means (11) being aligned with a line parallel to said axles and passing through the tangent point of said toothed crown (9) and said satellite pinion (8);

in such a way that, for each position of said third axle (16) along said ellipse (E), the longitudinal direction of said arm (17) is orthogonal to said ellipse.

4,263,514
ELECTRON BEAM SYSTEM

John W. Reeds, Jr., Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

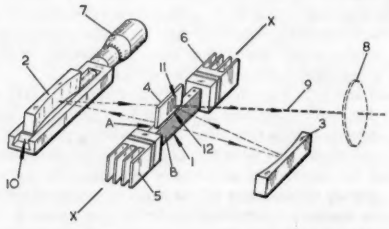
Filed Sep. 13, 1979, Ser. No. 75,354
Int. Cl.[3] H01J *37/147*
U.S. Cl. 250—492 A 13 Claims

1. An electron beam system comprising an electron source;
means for accelerating electrons from said source to form a beam moving along a beam path;
first and second electron optical lenses positioned along said beam path;
means for operating said first lens in a first mode to form an image of said electron source at a first focal plane;
an aperture at said first focal plane larger than the image of said source at said first focal plane, said means for operating said first lens in a first mode being also for selectively operating said first lens in a second mode in which said aperture is flooded with electrons to form an image of said aperture; and
means for focusing said image at said first focal plane onto a target plane.

4,263,515
VARIABLE TEMPERATURE TEST TARGET

Herbert M. Runciman, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Filed Jun. 28, 1979, Ser. No. 53,061
Claims priority, application United Kingdom, Jul. 20, 1978, 30503/78
Int. Cl.[3] G01J *1/00*
U.S. Cl. 250—494 6 Claims

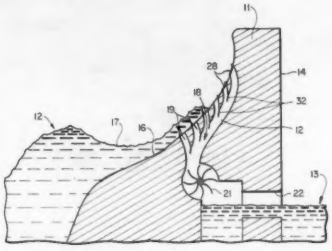


1. Apparatus for assessing the thermal sensitivity of optical systems, comprising a thermally-controlled element controlled so as to have a temperature-gradient in one direction, first and second optical systems respectively arranged to direct black body radiation emanating from sources formed by first and second portions of said element to a common station, a target located at said common station and defining for said radiation alternate transmissive and reflective regions spaced according to a predetermined spatial frequency, the arrangement being such that, in use, the target transmits radiation from said first optical system and reflects radiation from said second optical system along a common path, and adjustment means connected to one of said optical systems so as effectively to vary along said one direction one of said first and second portions relative to the other in order to vary the temperature difference between said sources.

4,263,516
BREAKWATER AND POWER GENERATOR

George M. Papadakis, 12 Angello Ter., Grover City, Calif. 93433

Filed May 10, 1979, Ser. No. 37,762
Int. Cl.[3] G03B *13/12*
U.S. Cl. 290—53 10 Claims

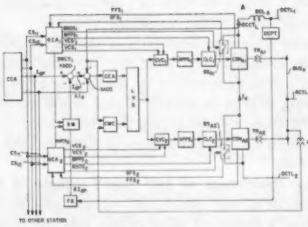


1. A breakwater and power generator comprising a breakwater disposed to protect a harbor from wave action said breakwater including a sloping wall facing the ocean whereby the water from the waves strikes the wall and flows upwardly along the wall, at least one passage formed in said breakwater and having one end opening at said wall and its other end into said harbor, whereby water flows from the ocean side to the harbor side in response to the waves, an electric generator, means in said passage serving to drive said generator responsive to water flowing through said passage and closure means mounted to said sloping wall in association with said passage whereby said passsage is closed when a wave strikes said wall and said passage is open when water flows downwardly along said wall.

4,263,517
CONTROL METHOD AND SYSTEM FOR AN HIGH VOLTAGE DIRECT CURRENT SYSTEM

Hiroo Konishi, Ibaraki, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 1, 1979, Ser. No. 8,482
Claims priority, application Japan, Feb. 10, 1978, 53/13468
Int. Cl.[3] H02J *3/36*
U.S. Cl. 307—82 14 Claims



1. A control method for a high voltage direct current system

transmitting electric power from one a.c. source to another a.c. source and having at least two converter stations comprising:

converting a.c. power from the one a.c. source into d.c. power in at least one of said converter stations;

transmitting said converted d.c. power to the other converter station;

converting said transmitted d.c. power into a.c. power in said other converter station;

controlling said a.c.-to-d.c. conversion of said at least one converter station depending on a difference between a d.c. current reference and a real d.c. current flowing in the high voltage direct current system; and

controlling said d.c.-to-a.c. conversion of said other converter station so as to maintain a constant margin angle of commutation; and

characterized by

reducing the d.c. current reference during a predetermined period when the operation mode of the high voltage direct current system is changed.

4,263,518

ARRANGEMENT FOR CORRECTING THE VOLTAGE COEFFICIENT OF RESISTANCE OF RESISTORS INTEGRAL WITH A SEMICONDUCTOR BODY

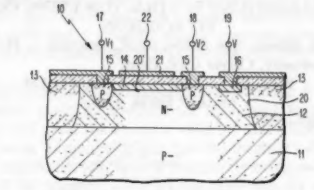
Daniel Ballatore, Le Bar/Loup; Francois Delaporte, Cagnes-sur-Mer; Gerard Lebesnerais, Saint Fargeau-Ponthierry, and Jean-Paul Nuez, Mennecy, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

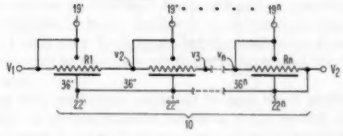
Filed Jun. 7, 1979, Ser. No. 46,529

Claims priority, application France, Jun. 29, 1978, 78 20115

Int. Cl.³ H01L *27/10, 29/76*

U.S. Cl. 307—303 **7 Claims**





1. A method of correcting the voltage coefficient of resistance of a resistor arrangement integral with a semiconductor body and arranged to include at least a resistive region of first conductivity type formed in an isolated portion of an epitaxial layer of opposite conductivity type with said resistive region passivated by a dielectric layer, the improvement comprising:

a resistive region including N discrete resistive segments formed in isolated portions of said epitaxial layer and electrically coupled to one another;

N discrete segments of conductive material formed on said dielectric layer over at least a portion of respective ones of said discrete resistive segments; and

means to couple all said discrete segments of conductive material to a voltage point on said N discrete resistive segments to provide voltage potential to said discrete segments of conductive material to vary the resistance value of said N discrete resistive segments an amount equal to and opposite the amount of variation in resistance value caused by potential applied to said epitaxial layer of opposite conductivity type.

4,263,519

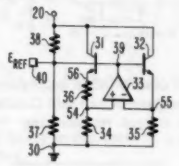
BANDGAP REFERENCE

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,734

Int. Cl.³ H03K *3/01;* **H01L** *31/00;* **G05F** *1/40*

U.S. Cl. 307—297 **8 Claims**



1. A reference voltage circuit comprising:

first and second common-collector amplifier transistors of the same conductivity type having respective base electrodes respectively connected to a first node, having respective emitter electrodes and respective base-emitter junctions;

first, second and third resistive means each having a respective first end and a respective second end; the first ends of said first and second resistive means connected to a common potential, the second ends of said first and third resistive means connected to the respective emitter electrodes of the first and second transistor respectively, and the first end of the third resistive means connected at the second end of the second resistive means;

a differential-input amplifier having inverting and non-inverting input connections connected for receiving respective potentials from the second ends of said first and second resistive means, and having an output connection, said differential input amplifier for providing at its output connection an amplified response to a potential difference across its input connections; and

means connecting the output connection of the differential-input amplifier to the first node to complete a direct coupled feedback loop, said feedback loop functioning to condition said first and second transistors to maintain the density of current in their base-emitter junctions in a prescribed ratio.

4,263,520

SIGNAL DETECTING CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENT

Munetoshi Kajihata, and Koji Aoyama, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 17, 1979, Ser. No. 30,735

Claims priority, application Japan, Apr. 19, 1978, 53-46044

Int. Cl.³ H03K *5/153*

U.S. Cl. 307—350 **4 Claims**

1. A signal detection circuit comprising:

a first rectifier for rectifying an input signal of an audio frequency band;

a first comparator for comparing the level of the output of said first rectifier with a reference level;

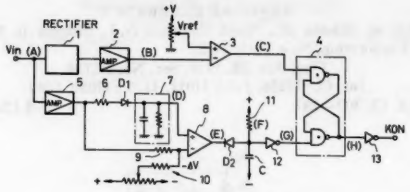
a second rectifier for rectifying said input signal;

an integrator for integrating the output of said second rectifier;

a second comparator for comparing the level of said input signal with the level of the output of said integrator;

means for delaying a response speed of the output of said second comparator;

means having a threshold level for generating an output comparing the output of said delaying means with the threshold level; and



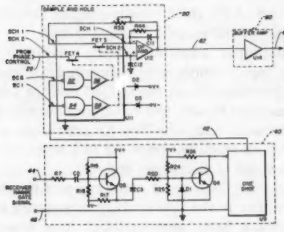
a flip-flop circuit controlled in accordance with the outputs of said first comparator and said threshold level means for generating an output representing rise and fall of said input signal.

4,263,521

DIFFERENTIAL SAMPLE AND HOLD CIRCUIT

Stephen J. Senger, Jamestown, N. Dak., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 913,624, Jun. 8, 1978, Pat. No. 4,178,594. This application Jun. 8, 1979, Ser. No. 47,187
Int. Cl.[3] G11C *27/02*
U.S. Cl. 307—353 **3 Claims**



1. A sample and hold circuit receiving an input signal, comprising:

a. sampling switch means coupled to receive said input signal;

b. an operational amplifier having inverting and noninverting inputs coupled to said sampling switch means;

c. feedback means coupled to said operational amplifier;

d. a holding capacitor coupled to the noninverting input to said operational amplifier; said holding capacitor acquiring substantially the peak amplitude level of each sampled portion of said input signal; said holding capacitor in combination with the input impedance of said operational amplifier comprising an RC circuit with a time constant long in comparison with the sampling time of said sampling switch means;

e. said sampling switch means comprising an FET switch which comprises:

(1) first switching channel defined by a field effect transistor incorporated within said feedback means;

(2) a second switching channel defined by a second field effect transistor being coupled to receive said input signal and coupled to the noninverting input to said operational amplifier; and

(3) first and second control paths responsive to sample control pulses to switch into conduction, respectively, said first and second field effect transistors; said field effect transistors being otherwise nonconducting;

(4) said first field effect transistor exhibiting a significantly larger charge transfer during switching than said second field effect transistor; and

sampling control means for providing the sample control pulses; said sampling control means being coupled to both said first and second control paths such that said first and second switching channels are constrained to switch on or off simultaneously; said first switching channel in combination with said feedback means applying a switching transient to the inverting input to said operational amplifier which balances the switching transient appearing on the noninverting input to said operational amplifier via said second switching channel; the balanced switching transients being suppressed by reason of the common mode rejection properties of said operational amplifier, thereby deglitching the sampling output from said sample and hold circuit;

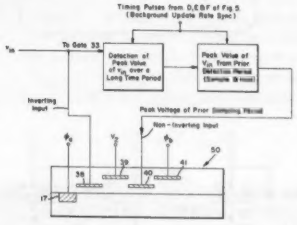
f. said sampling switch means in combination with said operational amplifier being operable to suppress any significant switching transients attendant to the sampling process.

4,263,522

BACKGROUND SUBTRACTOR USING CCD TECHNIQUES

William E. Jensen, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 21, 1978, Ser. No. 972,134
Int. Cl.[3] H03K *5/153*
U.S. Cl. 307—358 **7 Claims**



1. A CCD background subtractor for processing applied input signals, comprising the combination of:

first means, including a first charge storage area, for detecting during periodic sampling intervals, the peak value of an applied input signal and for storing a charge indicative thereof in said first charge storage area;

second means, including a second charge storage area, coupled to the first means, for substantially periodically transferring the charge from said first to said second charge storage area, for storing said transferred charge and for converting said transferred charge into a reference voltage; and

third means including a third charge storage area, coupled to said second means and fed by the reference voltage and by said applied input signal, for providing a charge in said third storage area which represents the difference between the applied input signal and the peak value of the applied input signal detected during a prior sampling interval.

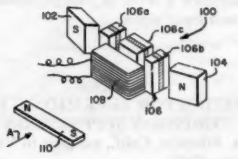
4,263,523
PULSE GENERATOR USING READ HEAD WITH WIEGAND WIRE

John R. Wiegand, Valley Stream, N.Y., assignor to The Echlin Manufacturing Company, Branford, Conn.

Continuation-in-part of Ser. No. 897,483, Apr. 18, 1978, which is a continuation-in-part of Ser. No. 793,394, May 3, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 75,887

Int. Cl.[3] **G11C** *11/04;* **H03K** *3/45*

U.S. Cl. 307—419 **7 Claims**



1. A pulse generator comprising:

a Wiegand wire having core and shell portions and having the characteristic that it requires the aid of an external field to switch from its confluent state to its reverse state,

read head means to establish a predetermined magnetic field along a predetermined path, the magnitude and direction of said magnetic field varying along said path,

motive means to create relative movement of said head and said wire so that said wire travels along said path from a first position on said path to a final position along said path, said magnetic field having at least a first magnitude in a first direction at said first position, said first magnitude being sufficiently great to set the magnetization of both said core and said shell in a predetermined first confluent state,

said field having a second magnitude in a second direction at a second position downstream from said first position along said path, the absolute value of said second magnitude being substantially less than the absolute value of said first magnitude, said second magnitude being sufficient to switch the magnetization of said core thereby switching the state of said wire from said first confluent state to said reverse state, said second magnitude being insufficient to set the magnetizatin of said shell,

said field having a third magnitude in said first direction at a third position downstream from said second position, said third magnitude being sufficient to switch the magnetization of said core thereby switching said wire from said reverse state to said first confluent state at said third position, and

a pickup coil positioned adjacent to said third position to provide an output pulse in response to the switch of state of said wire from said reverse state to said first confluent state.

4,263,524
ELECTRIC TWO MOTOR DRIVE

Arthur Diederichs, Würzburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,754

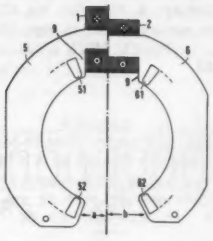
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742102

Int. Cl.[3] **H02K** *7/20*

U.S. Cl. 310—112 **5 Claims**

1. In a stator for use in an electric two motor drive, the stator including a stator lamination stack; a commutator motor field winding having a small number of poles, such as two, disposed on the lamination stack; and an induction motor winding having a larger number of poles distributed in slots in the stack, the improvement comprising;

the lamination stack having an air gap and a single field excitation winding carried on a region of the circumference of the stack at a location 180° around the circumference away from the gap,



the field winding being in the form of a concentrated ring armature winding.

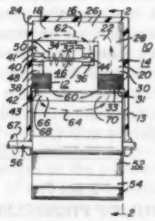
4,263,525
SIGNAL GENERATING MEANS

Richard A. Lathlaen, Hatfield, Pa., assignor to TRW, Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 972,865, Dec. 26, 1978. This application Apr. 23, 1979, Ser. No. 32,137

Int. Cl.[2] **H02K** *21/38*

U.S. Cl. 310—155 **38 Claims**

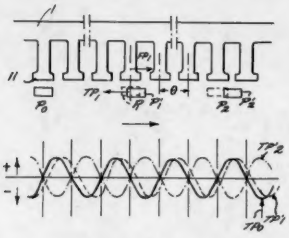


1. A signal generating means comprising a bistable magnetic device which alters its magnetic state when the density of magnetic flux to which it is subject passes through a predetermined value, detecting means providing an output signal responsive to a change in magnetic state of said bistable device, conducting means comprising first and second portions for conducting magnetic flux in first and second paths and subjecting said bistable device to conducted magnetic flux, said bistable device being connected between the first and second portions of said conducting means for conducting therethrough magnetic flux in the first and second paths, the second portion providing the second path with an alterable permeance for varying the reluctance of the second path, and energizing means for providing magnetic flux to said conducting means having a sense along the first path through the bistable device which is opposite to its sense in the second path, the density and sense of the magnetic flux to which said bistable device is subject changing with the variation of reluctance of the second path of said conducting means to alter the state of said bistable device.

4,263,526
AC GENERATOR WITH LOW NOISE CLAW TOOTH ROTOR

Masahiro Taguchi, and Mitsuo Inagaki, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 4, 1979, Ser. No. 27,282
Claims priority, application Japan, Apr. 10, 1978, 53-41918
Int. Cl.[3] H02K 1/22
U.S. Cl. 310—263 6 Claims



1. In an AC generator for a vehicle comprising an armature iron core, three-phase armature windings wound on said armature iron core and a rotor having a pair of finger magnetic poles in the circumference thereof, which is formed with a plurality of claw-shaped pole pieces to be energized to opposite polarities and disposed to oppose tooth portions of said armature iron core with a small gap therebetween, the improvement wherein:

said claw-shaped pole pieces are deviated relative to said opposed tooth portions,

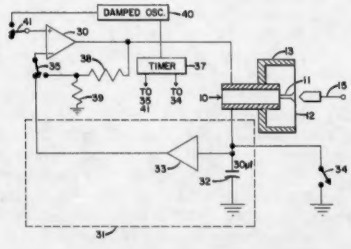
thereby to cancel torque variation generated between said claw-shaped pole pieces and said opposed tooth portions and to greatly decrease magnetic sound,

the deviated angle ($\Delta\theta$) of each of said deviated claw-shaped pole pieces relative to said opposed tooth portions in the state where at least one claw-shaped pole piece and at least one tooth portion are positioned at the same angular position with each other being expressed by the equation $\Delta\theta=(\theta/P)\times n$, wherein θ is one slot pitch angle, P is the number of at least two pole pieces to be used for cancelling torque variation and n is a constant of all of the integral numbers from 1 to P-1.

4,263,527
CHARGE CONTROL OF PIEZOELECTRIC ACTUATORS TO REDUCE HYSTERESIS EFFECTS

Robert H. Comstock, West Acton, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed May 17, 1979, Ser. No. 39,901
Int. Cl.[3] H01L 41/08
U.S. Cl. 310—316 11 Claims



1. Piezoelectric apparatus for controllably displacing one object with respect to another in response to an electrical input signal comprising:

piezoelectric actuator means for displacing such object and electrically charging in response to an applied electrical signal;

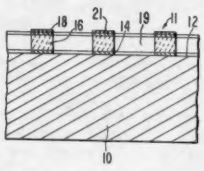
first circuit means responsive to the level of charge on said piezoelectric actuator means for producing a feedback signal in substantial proportion to said level of charge; and

second circuit means jointly responsive to said electrical input signal and said feedback signal for applying to said actuator means said applied electrical signal for producing on said actuator a level of charge substantially proportional to said input signal.

4,263,528
GRID COATING FOR THERMIONIC ELECTRON EMISSION SUPPRESSION

George Miram, Atherton, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 3, 1978, Ser. No. 902,529
Int. Cl.[3] H01J 1/46, 21/10
U.S. Cl. 313—293 21 Claims



1. A grid-controlled electron source comprising, a thermionic cathode having an electron-emissive surface, a multi-apertured insulative layer, and a multi-apertured control grid overlaying said electron emissive surface, said control grid comprising a multi-apertured conductive layer which is electrically isolated from said thermionic cathode by said insulative layer, said insulative layer being bonded to said control grid, the surface of said conductive layer distal said cathode being coated with a layer of boron nitride whereby the flow of thermionic electrons from said thermionic cathode can be controlled by applying a selected potential difference between said cathode and said conductive layer, and thermionic electron emission from said grid is inhibited by said boron nitride layer.

17. A thermionic bonded-grid-controlled electron source providing suppression of thermionic emission by said grid, comprising:

a thermionic cathode having an electron-emissive surface;

a multi-apertured conductive grid overlaying said electron emissive surface;

an insulative member interposed between said emissive surface and said conductive member;

a barrier layer interposed between said insulative member and said emissive surface;

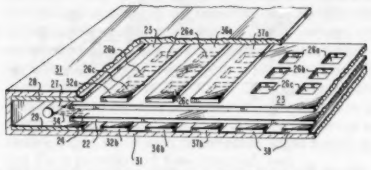
and a boron nitride layer coating the surface of said conductive layer distal said cathode, said layer being much less thick than said insulative member to preclude said layer from behaving as a pure insulator, said layer inhibiting thermionic emission by said conductive layer, said cathode, grid, insulative member and barrier layer comprising a bonded unit,

whereby thermionic electron emission from said cathode may be controlled by application of a selected potential between said conductive layer and said cathode, minimal cathode-to-grid spacing is provided, while thermionic emission from said grid is inhibited.

4,263,529
MODULATOR WITH VARIABLE LAUNCH CONDITIONS FOR MULTI-ELECTRON GUN DISPLAY DEVICES

Wieslaw W. Siekanowicz, Lawrenceville, and John R. Fields, Cranbury, both of N.J., assignors to RCA Corp., New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,451
Int. Cl.³ H01J *29/46, 29/48*
U.S. Cl. 313—422 **7 Claims**



1. In a flat panel display device having an evacuated envelope divided into a plurality of channels, said channels including an electron gun section, and an electron beam guide section, said electron gun section including means for providing electron beams and means for modulating said electron beams, said electron guide section including spaced substantially parallel beam guides for receiving said electron beams in the space between said guides and having a plurality of apertures arranged in columns longitudinally along said guides and in rows transversely of said guides, the improvement comprising:

an electron beam launch section positioned between said electron gun section and said electron beam guide section, said launch section including at least one pair of launch electrodes, each of said launch electrodes extending continuously over said beam guides and substantially aligned with one of said rows of apertures.

4,263,530
WARM WHITE FLUORESCENT LAMP HAVING GOOD EFFICACY AND COLOR RENDERING

Jacob Van Broekhoven, North Caldwell, and Richard Corth, Nutley, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

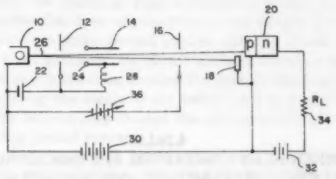
Filed Jul. 17, 1979, Ser. No. 58,574
Int. Cl.³ H01J *61/44*
U.S. Cl. 313—487 **3 Claims**

1. A fluorescent lamp having a warm-white color and combined high efficacy and good color rendition, said lamp comprising a sealed elongated light-transmitting envelope having electrodes operatively positioned therein proximate the ends thereof and enclosing a discharge-sustaining filling comprising mercury and a small charge of inert ionizable starting gas which when energized generates a discharge comprising ultraviolet radiations and a limited proportion of visible radiations, phosphor means carried on the interior surface of said envelope, said phosphor means comprising predetermined amounts and relative proportions of apatite-structured calcium fluorophosphate activated by antimony and manganese and yttrium oxide activated by tervalent europium, said antimony activator constituting from 0.4 to 1 weight percent and said manganese activator constituting from 1 to 1.5 weight percent of said apatite-structured calcium fluorophosphate phosphor, said europium activator constituting from 2 to 13 weight percent of said yttrium oxide phosphor, said apatite-structured calcium fluorophosphate phosphor responsive to the ultraviolet radiations generated by the discharge to provide a broad band emission of visible radiations, said yttrium oxide phosphor responsive to the ultraviolet radiations generated by the discharge to provide a narrow emission in the red-orange region of the visible spectrum, and the predetermined amounts and relative proportions of said apatite-structured calcium fluorophosphate phosphor and said yttrium oxide phosphor being such that the total visible emissions from said energized lamp fall within the warm-white ellipse as inscribed on the x-y chromaticity diagram of the ICI system.

4,263,531
ELECTRON BEAM-SEMICONDUCTOR DIODE HYBRID DEVICE FOR PHASE CONTROL

Max N. Yoder, 6512 Truman Lane, Falls Church, Va. 22043

Filed Jun. 10, 1971, Ser. No. 151,974
Int. Cl.³ H01J *29/08*
U.S. Cl. 315—3 **9 Claims**



1. Apparatus to control the phase of an output signal relative to that of an input signal in a manner such that the phase vs. frequency relationship of the output signal is linear comprising, in combination:

electron-beam generating means including

beam-deflection means to which said input signal is applied for deflecting the electron beam in accordance with a parameter of said input signal, said deflection means being structured to cause a traveling-wave type of interaction between said beam and said input signal as it propagates along said beam-deflection means;

signal-transit-time control means for controlling the transit time of said input signal whereby the phase of said output signal with respect to the input signal can be controlled; and

means for deriving the phase-varied signal comprising p-n semiconductor junction means on which said electron beam impinges, said p-n junction means being arranged so that said beam impinges on the p-material before striking any other material of said junction means.

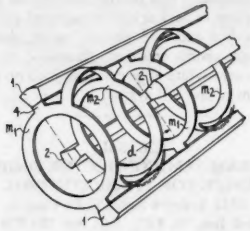
4,263,532
MICROWAVE DELAY LINE

Philippe Gosset, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 18, 1979, Ser. No. 104,733
Claims priority, application France, Dec. 22, 1978, 78 36251
Int. Cl.³ H01P *9/00, 9/02;* H01J *23/27*
U.S. Cl. 315—3.5 **3 Claims**

1. A microwave delay line which ensures, in a travelling wave tube, the interaction between an electron beam focussed along the axis of the line and the fundamental transmission mode of the ultra-high frequency travelling wave passing along said line at a phase velocity close to that of the beam, the amplitude of the inverse mode of wave transmission being reduced compared with that of a helical microwave delay line, wherein it has a periodic geometrical structure involving more particularly the repetition of first and second meshes and wherein rods made from a dielectric and good heat conducting material are arranged parallel to the axis of the line and are regularly distributed over its periphery, said rods being subdivided equally into first and second groups regularly distributed over the line periphery, the rods of the first group being

welded to the first meshes of the line and insulated from the second meshes and the rods of the second group are welded to



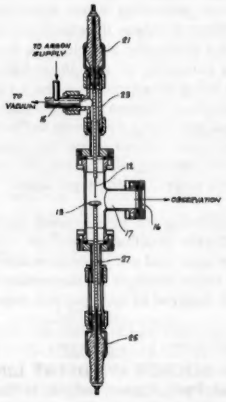
the second meshes of the line and are insulated from the first meshes.

4,263,533

MAGNETICALLY CONTAINED ARC DISCHARGE LAMP WITH CROSSED ELECTRIC AND MAGNETIC FIELDS

Tetsuo Hadeishi, 22 Camelot Ct., Berkeley, Calif. 94707

Filed Jun. 30, 1978, Ser. No. 920,673
Int. Cl.[2] H01J *1/50*; H05B *31/28*
U.S. Cl. 315—111.9 **12 Claims**



1. An arc discharge lamp comprising,

an anode and a cathode, said cathode spaced from said anode,

means for establishing an electric field between said anode and cathode of a magnitude sufficient to cause an electrical arc discharge therebetween,

magnet means having opposed pole pieces with an air gap therebetween for establishing a magnetic field between said anode and cathode, said magnetic field having a field direction perpendicular to said electrical field,

housing means for said anode and cathode, said housing means having dimensions fitting within said air gap of said magnet means and having a light emission port for emitting light from said arc discharge, and

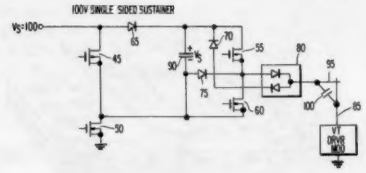
gas supply means connected to said housing means for delivering an ionizable gas to said housing for ion bombardment of said cathode.

4,263,534

SINGLE SIDED SUSTAIN VOLTAGE GENERATOR

William J. Martin, Lake Katrine, and Bergert G. Kleen, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1980, Ser. No. 110,314
Int. Cl.[3] H05B *41/14*
U.S. Cl. 315—169.4 **3 Claims**



1. A circuit for providing a sustain voltage waveform for a gas discharge display panel comprising:

(a) first (**45**), second (**50**), third (**55**) and fourth (**60**) switches each having an input, output and control port, the output of said first switch connected to the input of said second switch and to the output of said fourth switch, the output of said second switch applied to ground;

(b) a first diode connected between the input of said first switch and the input of said third switch;

(c) a first axis line connected on one hand to a first side of a gas discharge cell, and on the other hand to the output of said third switch and the input of said fourth switch;

(d) a capacitor connected between the input of said third switch and the output of said fourth switch;

(e) a source of voltage applied to the input of said first switch; and

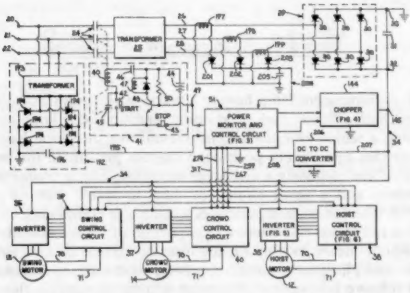
(f) a second axis line applying a second side of said gas discharge cell to ground.

4,263,535

MOTOR DRIVE SYSTEM FOR AN ELECTRIC MINING SHOVEL

Byron M. Jones, New Berlin, Wis., assignor to Bucyrus-Erie Company, Milwaukee, Wis.

Filed Sep. 29, 1978, Ser. No. 947,259
Int. Cl.[3] H02P *3/00*
U.S. Cl. 318—87 **6 Claims**



1. In a drive system for a mining machine having a hoist motor, a crowd motor and a swing motor, the combination comprising:

a rectifier circuit having inputs connected through lines to a source of a.c. power and an output terminal at which d.c. power is produced;

disconnect means connected to said lines and being operable in response to a disable signal applied to a power enable

input to disconnect said rectifier circuit from said a.c. power source;

a d.c. bus connected to said rectifier output terminal;

a set of inverters, each having an input connected to said d.c. bus, each having an output connected to one of said motors and each being operable in response to signals from an associated inverter control circuit to deliver power to its attached motor from said d.c. bus and to regenerate power to said d.c. bus from its attached motor; and

a power monitor and control circuit which includes:

a. voltage sensing means coupled to said a.c. power source for generating an analog signal which is proportional to the voltage applied to the inputs of said rectifier circuit;

b. comparator means connected to said voltage sensing means for generating a preselected logic signal when said analog signal drops below a predetermined level;

c. timer means connected to said comparator means and being enabled by said preselected logic signal to generate said disable signal to said disconnect means power enable input when said preselected logic signal is present for a preselected time interval; and

d. means connected to said d.c. bus for generating a reduction signal to each of said inverter control circuits which reduces the power delivered by said inverters to their attached motors when the voltage of said d.c. bus drops below a preselected level.

4,263,536

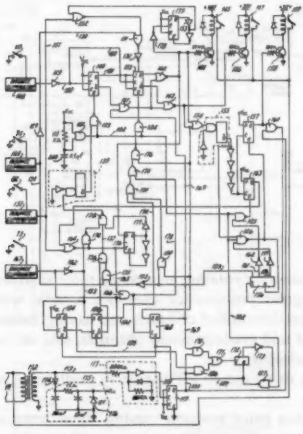
CONTROL CIRCUIT FOR A MOTOR-DRIVEN DOOR OPERATOR

Maw H. Lee, Broadview Heights, and Chun F. Chen, North Canton, both of Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Filed Aug. 7, 1978, Ser. No. 931,668

Int. Cl.³ H02P *1/22*

U.S. Cl. 318—266 **7 Claims**



1. An improved control circuit for a motor-driven door operator comprising:

an up limit switch activated when the door is in an open position,

motor sequence initialization circuitry connected to the up limit switch and to an external power supply and responsive to connection of power after the door operator is installed and responsive to restoration of power after a power outage for setting the sequence of operation of a selectively energizable reversible motor so the motor is initially energized for actuating a drive mechanism to move the door toward a closed position when the control circuit is activated if the up limit switch is activated and so the motor is initially energized for actuating the drive mechanism to move the door toward the open position when the control circuit is activated if the up limit switch is not activated,

a selectively activated control switch for activating the control circuit to energize the motor for actuating the drive mechanism to move the door between the open and closed positions,

time delay circuitry connected to the control switch and responsive to activation of the control switch for timing a predetermined time delay period,

a safety switch activated by yieldable means actuable when the force on the drive mechanism exceeds a force represented by the door and the drive mechanism in motion,

a down limit switch activated as the door closes near the closed position,

obstruction detection circuitry connected to the safety switch, the down limit switch and the time delay circuitry and responsive to expiration of the time delay period for energizing the motor so that, if the safety switch is activated while the door moves toward the closed position after the time delay period expires and the down limit switch is not activated, the motor actuates the drive mechanism to move the door toward the open position and for de-energizing the motor if the safety switch is activated while the door moves toward the open position after the time delay period expires,

timer circuitry connected to the down limit switch and to the safety switch and responsive to activation of the down limit switch for energizing the motor no more than a predetermined additional time for actuating the drive mechanism to move the door toward the closed position and responsive to activation of the safety switch for de-energizing the motor,

the up limit switch being activated as the door opens near the open position for de-energizing the motor, and

maximum run-time circuitry connected to the up and down limit switches, the safety switch and the control switch for de-energizing the motor in the event that one of the up and down limit switches and/or safety switch fails and energization of the motor continues after a maximum predetermined time elapses following activation of the control circuit and for setting the sequence of operation of the motor so the motor is energized for actuating the drive mechanism to move the door toward the open position when the control circuit is activated.

4,263,537

CONTROLLED POSITIONING OF A MOTOR SHAFT

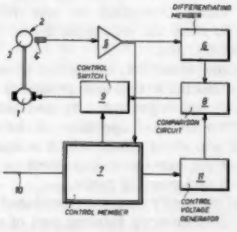
Hubertus Bettin, Braunschweig, and Rainer Bornemann, Meinersen, both of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Feb. 5, 1980, Ser. No. 118,789

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904275

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **17 Claims**



1. In a method for positioning the shaft of a motor which can be subject to a rotation force in either direction of rotation by

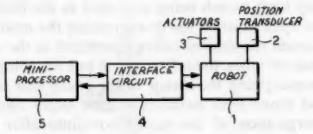
application of drive current of a respective polarity, in order to bring the shaft to a target angular position by the action of a digital control and a position sensor associated with the motor shaft for emitting a displacement step signal in response to each movement of the shaft through an incremental angle constituting a given fraction of one cycle of shaft rotation, which method includes comprising a signal derived from such step signal with a control signal and utilizing the result of the comparison to control the motor drive current, the improvement wherein: the displacement step signal produced by said sensor in response to each incremental angle of shaft movement is a signal cycle of sinus-like waveform; said method comprises deriving from the displacement step signal a shaft movement signal having a value represented by the sum of a component proportional to the displacement step signal and a component proportional to the time derivative thereof for the last half of the associated step signal cycle, and, after the shaft has reached a predetermined angular speed and at the moment when the shaft reaches a position spaced from the target position by one-half of the incremental angle, causing the control signal to have a value which decreases with time; said step of comparing comprises comparing the shaft movement signal with the control signal; and said step of utilizing the comparison result comprises varying the polarity of motor drive current in dependence on the polarity of the comparison result.

4,263,538

CONTROL SYSTEM FOR AN AUTOMATIC MACHINE

Claudio Richiardi, Turin, Italy, assignor to Societa di Elettronica per l'Automazione Sepa S.p.A., Turin, Italy

Filed Apr. 21, 1978, Ser. No. 898,566
Int. Cl.[3] G05B *19/42*
U.S. Cl. 318—568 **5 Claims**



1. A control system for the control of an automatic or robot having an articulated mechanical arm movable with a plurality of degrees of freedom by which its free end may describe any spatial path within its range of movement, said control system comprising:

position transducer sensitive to the position of said arm and responsive to displacements thereof to produce output signals representative of the position of said arm,

a mini-processor connected to the output of said transducer means whereby, in a learning mode of operation of the machine in which an operator displaces the arm along a selected path, said mini-processor is operable to process the signals generated by said transducer means to produce sequential digital data signals representative of the spatial coordinates of a plurality of spaced points along the path of movement impressed on said arm by the operator, memory means connected to said mini-processor and operable to store the sequential digital data signals produced thereby, and

actuator means operatively connected to said arm and electrically connected to said mini-processor and operating in response to signals generated by said memory means in a reproduction mode of operation of the machine, to displace said arm along a path which at least approximately reproduces the movement impressed on said arm by the operator in said learning mode,

wherein said memory means are constituted solely be a static magnetic core memory forming part of said mini-processor,

said mini-processor is adapted to operate in said learning mode to sample said transducer signals at a predetermined maximum frequency and also at a predetermined plurality of possible frequencies less than the said maximum frequency, to calculate interpolated values at points between the points actually sampled at each frequency below the maximum and corresponding to points at which sampling at said maximum frequency occurs, to compare said calculated values at each frequency with the actual values of the corresponding points sampled at said maximum frequency, and to select on the basis of such comparison the minimum sampling frequency at which said calculated values of the signals at said intermediate points differ from the actual sampled values of the signals at said corresponding points sampled at said maximum frequency by less than a predetermined maximum error value,

said sequential digital data derived from sampling at said selected minimum sampling frequency are directly stored in said static memory, and

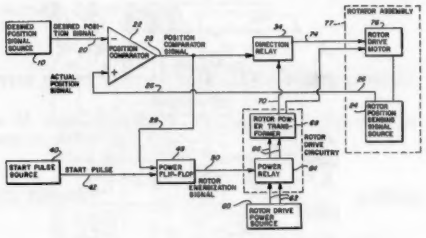
said digital data stored in said static memory for each of the degrees of freedom are processed by said mini-processor to make them suitable for said actuator means by generating supplementary digital signals representing calculated values of said transducer signals at points which would have been sampled and stored by carrying out said sampling at a frequency many times higher than said maximum frequency used in the learning mode of said machine.

4,263,539

AUTOMATIC ANTENNA POSITIONING APPARATUS

Stephen Barton, Cupertino, Calif., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 4, 1977, Ser. No. 839,252
Int. Cl.[2] G05B *1/06*
U.S. Cl. 318—664 **12 Claims**



1. A system for rotating an antenna rotor shaft to a predetermined angular position for use with a radio wave receiver utilizing predetermined channels and having means for selecting one of said predetermined channels, said antenna rotating system including:

a. rotor drive means for angularly positioning said antenna shaft;

b. antenna rotor position sensing signal source means for generating a variable analog actual position signal, said position source means being responsive to the relative angular position of said shaft;

c. channel selection source means for producing a channel selection signal, said channel selection source means being responsive to a selection of one of a plurality of predetermined channels on said receiver and producing a discrete channel selection signal for each channel selected;

d. desired antenna rotor position signal source means for producing one of a plurality of preselected desired analog antenna position signals in response to one of said discrete channel selection signals, said desired signal means including

1. a plurality of selectively variable analog signal genera-

tors for generating at least one desired position signal for each different desired rotor position, and

2. a desired position switching means for each desired position generator, said switching means being responsive to said discrete channel selection signal;

e. position comparator means for providing a position comparator signal, said position comparator means being responsive to said actual position signal and said desired position signal and providing a continuous output signal from the time said actual position and desired position signals are applied thereto until said actual position and desired position signals are equal;

f. direction control means for effecting directional control of said rotor drive means, said directional control means being responsive to said position comparator output signal;

g. start pulse source means for generating an initial start pulse, said start pulse source means being responsive to said channel selection signal;

h. start pulse delay means for producing a delayed start pulse, said delay means responsive to said initial start pulse; and

i. rotor power signal means for producing a rotor energization signal to activate said rotor drive means, said power signal means being responsive to said delayed start pulse and said position comparator signal;

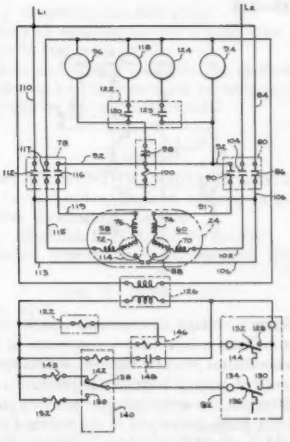
whereby said antenna is rotated to a desired position from an actual position in response to a selection of one of said channels of said radio wave receiver without further attention by the user or viewer thereof.

4,263,540

TWO-SPEED REFRIGERANT MOTOR COMPRESSOR

George W. Brandt, and Charles A. Dubberley, both of Tyler, Tex., assignors to General Electric Company, Louisville, Ky.

Filed Jul. 5, 1979, Ser. No. 55,086
Int. Cl.³ H02P *7/48;* H02H *7/08;* H02K *3/28*
U.S. Cl. 318—775 **18 Claims**



1. In a hermetic refrigerant compressor of the type having a sealed outer casing containing a compression mechanism for receiving refrigerant gas from a suction line, compressing the refrigerant gas and discharging the compressed refrigerant gas through a discharge line, and a motor for rotating drive shaft means in the compression mechanism at low speed and at high speed from a source of single phase electrical power, said motor comprising:

a slotted magnetic core;

a low speed four-pole main winding fitted substantially evenly into said slotted magnetic core, a four-pole auxiliary winding fitted in said slotted core in a location adjacent said low speed main winding;

a high speed two-pole winding fitted in said slotted core, a two-pole auxiliary winding fitted in said slotted core in a location adjacent said high speed two-pole auxiliary winding;

a first line break motor protector arranged in intimate thermal contact with said low speed four-pole main and auxiliary winding being connected electrically in series between said power source and said winding for controlling power to said four-pole winding independent of said two-pole winding; and

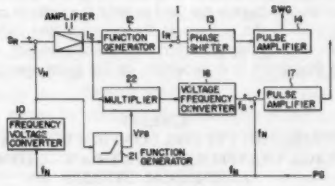
a second line break motor protector arranged in intimate thermal contact with said high speed two-pole main and auxiliary windings being connected electrically in series between said power source and said winding for controlling power to said two-pole winding independent of said four-pole winding whereby said compression mechanism may operate at one of said speeds when the line break of the other speed disconnects its associated winding from said power source.

4,263,541

FIELD CONTROL SYSTEM FOR CONTROLLING INDUCTION MACHINES

Chihiro Okado, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 2, 1979, Ser. No. 35,316
Claims priority, application Japan, May 10, 1978, 53-55376
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—802 **5 Claims**



1. A field control system for controlling an induction machine driven from a power source through a semiconductor inverter so that the output torque of the induction machine is reduced in proportion to a running speed thereof, said system comprising means for converting a pulse frequency (f_N) of said machine into a voltage (V_N) indicative of a running speed, means for comparing said voltage (V_N) with a reference voltage (S_R) and delivering an output (I_2) corresponding to the difference, a function generator connected to receive said voltage (V_N) for delivering an output (V_{FG}) partially proportional to said voltage (V_N), a multiplier for multiplying said output (I_2) with the output (V_{FG}), means for converting the output of the multiplier into a slip frequency (f_S), and means for adding, in the case of the motor operation of said induction machine, said slip frequency (f_S) to said pulse frequency (f_N), or subtracting, in the case of regenerative operation, said slip frequency (f_S) from said pulse frequency (f_N), thereby delivering the output pulses of the resultant frequency (f) to control said semiconductor inverter.

4,263,542

METHOD AND CIRCUIT ARRANGEMENT FOR CONTROLLING AN ASYNCHRONOUS MOTOR SUPPLIED FROM A STATIC FREQUENCY CHANGER

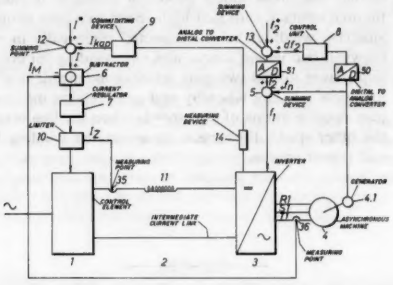
Helmut Schulze, Ober-Ramstadt, and Klaus Moll, Frankenthal, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,990

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752600

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—803 **4 Claims**



1. Method for controlling the speed and torque of an asynchronous machine having a rotor, a static frequency changer or self-commutating inverter with commutating capacitors and an impressed intermediate current link, which comprises feeding the machine through the static frequency changer with the impressed intermediate current link, forming a control variable for the frequency of the current delivered by the frequency changer from an electrical variable corresponding to a slip frequency value and an electrical variable corresponding to actual value of a frequency proportional to the rotor speed of the asynchronous machine, operating the asynchronous machine with constant flux in a region of constant maximal torque, adjusting the flux in the machine to a maximal value in an operating region of constant maximal power in which maximal machine voltage is reached to hold the voltage constant in dependence on the voltage at the commutating capacitors of the self-commutating inverter, and simultaneously increasing the slip frequency in dependence on the rotor speed.

4,263,543

CONTROL CIRCUIT FOR CONTROLLING BATTERY VOLTAGE TRANSITION RATE IN AN AUTOMOTIVE ELECTRICAL SYSTEM

Donald L. Watrous, Liverpool; Dwight V. Jones, Baldwinsville, and Raymond J. McArthur, Liverpool, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,217

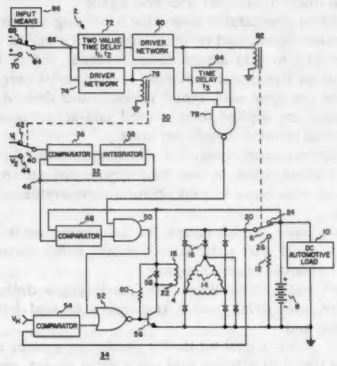
Int. Cl.³ H02J *3/00;* **B60L** *1/02*

U.S. Cl. 322—8 **15 Claims**

7. In an automotive electrical system that includes an electric alternator of regulated output voltage that is selectively coupled to energize the vehicle battery and shunt connected load circuit, a control circuit for controlling the voltage transition rate between battery float and discharge voltage levels, comprising:

(a) first means for regulating the alternator output voltage to said battery float level when the vehicle battery is coupled in a first mode in which said battery receives charge current from said alternator, and for transforming said alternator output voltage to said discharge level at a predetermined rate prior to the battery coupling being changed from said first mode to a second mode in which said battery supplies current to said load circuit, and

(b) second means for transforming said alternator output voltage to said float level at said predetermined rate after said battery coupling being changed from said second mode to said first mode, whereby said predetermined rate



provides a gradual change in the energization of said load circuit when changing said battery coupling between said first and second modes.

4,263,544

REFERENCE VOLTAGE ARRANGEMENT

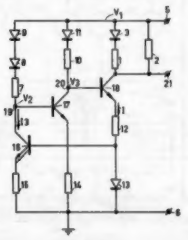
Hendrik Groendijk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,219

Claims priority, application Netherlands, Apr. 5, 1978, 7803607

Int. Cl.³ G05F *3/08*

U.S. Cl. 323—313 **7 Claims**

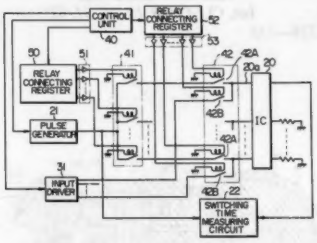


1. A reference voltage arrangement comprising, a current circuit that includes a first resistor connected in series circuit with a semiconductor junction element, means for supplying a stabilized current with a positive temperature coefficient to said current circuit, the semiconductor junction element in said current circuit being connected in the forward direction, the resistance value of said first resistor in relation to the value of said stabilized current being selected so that the flow of said stabilized current through said series circuit of the semiconductor junction element and the first resistor produces a voltage across said series circuit that is highly temperature independent, said current circuit further comprising a second resistor connected parallel to said series circuit, said second resistor having a resistance value such that the voltage across the parallel connection of the second resistor and said series circuit is higher than the voltage across the semiconductor junction element.

4,263,545
METHOD OF TESTING PULSE DELAY TIME

Shozo Satake, Hadano, and Katsuhiko Takizawa, Machida, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1979, Ser. No. 37,888
Claims priority, application Japan, May 17, 1978, 53-57664
Int. Cl.³ G01R *27/00*
U.S. Cl. 324—57 PS **8 Claims**



1. A method of measuring a time from an instant at which an input pulse from a pulse generator is applied to an input terminal of a circuit under consideration to an instant at which an output pulse appears on an output terminal of said circuit under consideration, said input terminal of said circuit under consideration being connected with an input driver through a first relay on one hand and connected with said pulse generator through a second relay on the other hand, the method comprising the sequential combination of:

a first step of closing said first relay to apply a first voltage of a predetermined level to said input terminal by said input driver;

a second step of closing said second relay to apply a second voltage of the same level as said predetermined level of said input driver to said input terminal by said pulse generator;

a third step of opening said first relay;

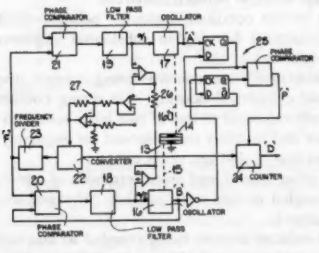
a fourth step of applying an input pulse from said pulse generator to said input terminal; and

a fifth step of measuring a time from the application of the input pulse on said input terminal to the appearance of an output pulse on said output terminal.

4,263,546
DISPLACEMENT TRANSDUCER SYSTEM

Adrian P. Morris, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 5, 1979, Ser. No. 54,880
Claims priority, application United Kingdom, Jul. 12, 1978, 29554/78
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **7 Claims**



1. A displacement transducer system comprising a voltage controlled frequency generator, a pair of phase locked loops each including a phase comparator and a voltage controlled oscillator which receives a control voltage from the respective comparator the two comparators being supplied with a reference frequency obtained from said frequency generator in addition to the output of the respective voltage controlled oscillator, each voltage controlled oscillator having a reactive timing component associated therewith, the values of the two timing components being determined by the position of the member such that as the member moves in one direction the reactance of one component will increase whilst that of the other component will decrease and vice versa, means for providing a voltage dependant upon the sum of the reactances of said components and for applying said voltage to the voltage controlled frequency generator, means for comparing the phases of the outputs of said voltage controlled oscillators, the output of said means being applied to a counter which receives a further input from said frequency generator, the count value provided by the counter being an indication of the phase difference between the outputs of said voltage controlled oscillators, the phase difference itself being an indication of the difference in the reactive values of the two timing components and hence the position of said member.

4,263,547
TEST PROBE AND TERMINAL

Philmore E. Johnson, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 10, 1978, Ser. No. 904,367
Int. Cl.³ G01R *1/06, 31/02*
U.S. Cl. 324—72.5 **8 Claims**

1. A test probe for providing a releasable electrical connection to a conductor comprising an elongate conductor having a probe end and a terminal end, a casing normally enveloping the conductor, said casing consisting of a hollow intermediate body, a hollow barrel and a cap with each being formed from electrically insulating material, said barrel having a recess end for receiving the probe end and another end telescopingly movable within with respect to one end of the body, said cap being secured on the terminal end of the conductor and being telescopingly movable over with respect to the other end of the body, means for retaining the conductor in the casing for relative sliding movement with respect to the body and barrel and spring means engageable with the casing and the conductor for resisting telescoping movement of the barrel and cap with respect to the body.

4,263,548
MIDPOINT MEASURING CIRCUIT

Scott W. Carlson, Blaine, and James T. Bartelt, Shoreview, both of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Oct. 24, 1979, Ser. No. 87,680
Int. Cl.³ G01R *19/00, 19/16;* H03K *5/20*
U.S. Cl. 324—102 **7 Claims**

1. Electronic test apparatus for measuring the voltage amplitude of a pulse type waveform at a predetermined time following the leading edge thereof, comprising:

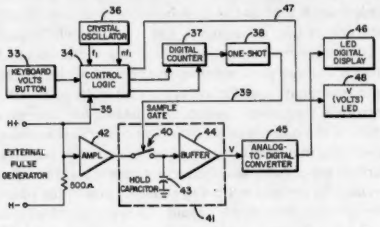
(a) a first source of regularly occurring timing signals of a frequency, f_1;

(b) a second source of regularly occurring timing signals of a frequency, n f_1;

(c) counter means connected to be incremented by said timing signals of frequency f_1 which occur during the duration of the pulse to be measured and to be decremented by said timing signals of frequency n f_1 during the

duration of a subsequently occurring one of said pulses to be measured;

(d) strobe signal generating means for detecting when the count in said counter means reaches a predetermined value and for generating a strobe signal when said predetermined value is reached;



(e) means coupled to receive said strobe signal for sampling the voltage amplitude of said pulse to be measured at the time of occurrence of said strobe signal; and

(f) means for displaying a value corresponding to the amplitude so sampled.

4,263,549

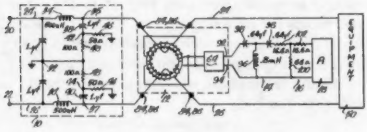
APPARATUS FOR DETERMINING DIFFERENTIAL MODE AND COMMON MODE NOISE

Alphonse A. Toppeto, Grayslake, Ill., assignor to Corcom, Inc., Libertyville, Ill.

Filed Oct. 12, 1979, Ser. No. 84,140

Int. Cl.³ G01R 1/20; H01F 17/06

U.S. Cl. 324—127 **9 Claims**



1. An accessory for a split toroidal r-f current probe of the type having a current sensing aperture, for use in the discrimination and measurement of common mode and differential mode noise, which comprises: a non-ferrous metallic barbell having a central portion of a length and cross-section to fit closely within the probe aperture and larger end portions to overlap the ends of said aperture, passageway means on opposite sides of said central portion and parallel to the central axis thereof to seat lengths of insulated wire therein and provided with holes meeting the ends of said passageway means and extending through said larger end portions for the passage of said wire.

4,263,550

TEST POINT MOUNTED CIRCUIT CONDITION INDICATOR

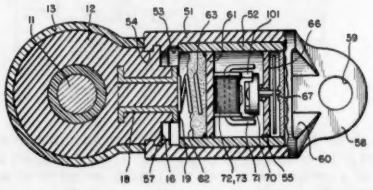
Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60118

Continuation-in-part of Ser. No. 895,151, Apr. 10, 1978, Pat. No. 4,152,643. This application Feb. 14, 1979, Ser. No. 12,155

The portion of the term of this patent subsequent to Jul. 3, 1996, has been disclaimed.

Int. Cl.³ G01R 19/16, 31/02

U.S. Cl. 324—133 **22 Claims**



1. A circuit condition indicator device for mounting to the test point terminal of a connector employed in a high-voltage system wherein the connector includes a conductor embedded in an insulating member encased in a conductive sheath referenced to ground, and wherein the test point terminal includes a projection of the insulating member extending through the conductive sheath and having an electrically conductive test point contact embedded in the insulating member, the test point contact having an exposed portion at the outer end of the test point terminal, alternating current in the conductor capacitively inducing a proportional alternating current at the test point contact for powering said device, said device comprising, in combination:

circuit means including a rectifier having input terminals and output terminals and a viewable circuit condition indicator;

means including an electrically-conductive outer shell having an open end for mounting to said test point terminal and a closed end, and a window, said outer shell contacting said grounded connector sheath when said test point cap is mounted on said test point terminal;

a cylindrical housing telescopingly disposed within said outer shell, at least the portion of said housing adjacent said window being transparent;

said circuit condition indicator being located within said cylindrical housing in substantial alignment with said window;

an electrically conductive spring contact disposed within said cylindrical housing, said spring contact having one end connected to one of said input terminals of said rectifier and its other end disposed for engaging said exposed portion of said test point contact;

the other one of said input terminals of said rectifier being coupled to said outer shell to reference said rectifier to ground;

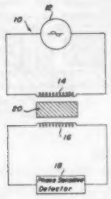
said induced current being coupled to said rectifier by said contact and rectified by said rectifier to charge said capacitor and energize said circuit condition indicator, said indicator being visible through said window to indicate circuit status.

4,263,551

METHOD AND APPARATUS FOR IDENTIFYING CONDUCTIVE OBJECTS BY MONITORING THE TRUE RESISTIVE COMPONENT OF IMPEDANCE CHANGE IN A COIL SYSTEM CAUSED BY THE OBJECT

William D. Gregory, Vienna; Larry H. Capots, McLean; both of Va., assignors to Georgetown University, Washington, D.C.

Continuation-in-part of Ser. No. 622,892, Oct. 16, 1975, abandoned. This application Jan. 20, 1978, Ser. No. 871,099
Int. Cl.[3] G01R *33/12*
U.S. Cl. 324—233 28 Claims



1. A system for identifying objects having conductive properties, comprising:

(a) a highly stable coil system for producing a magnetic field into which the object is introduced, and having an input coil and being relatively free of extraneous effects,

(b) frequency generating means having extremely little variation from rated values, connected to the input coil for applying plural selected periodic driving frequencies thereto, and

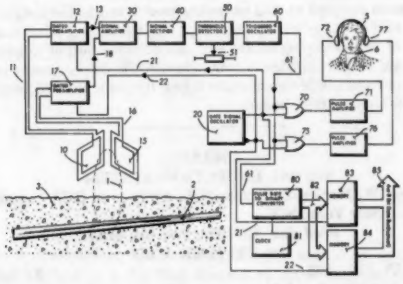
(c) means for obtaining the true resistive component of the impedance change in said coil system due to the conductive object placed in the magnetic field of the coil system at each driving frequency by referencing the output signal of said coil system to within one degree of the signal applied to the input coil for all frequencies.

4,263,552

TRANSLATIVE INTELLIGENCER APPARATUS PROVIDING POLYINDICATIVE RESPONSE

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Dec. 8, 1978, Ser. No. 967,585
Int. Cl.[3] G01V *3/11*
U.S. Cl. 324—326 12 Claims



1. Translative intelligencer means plurally responsive to the signal pattern level of an amplitude variant first signal pattern envelope produced by a substantially separate exciter means, said signal produced thereby being effectively comprised of an ordered sequence of signal pulses of various instantaneous energy levels principally controlled to recur at a periodic frequency rate at least equal to the highest frequency pulse component in said signal pattern, said intelligencer means coupled thereto and operative to produce therefrom at least one demodulated pulse train signal the components of which are substantially indicative of at least one of the various values of the said signal level, as usually produced by impedance variation in the coupling between the said intelligencer means and said exciter means including in combination:

a. a substantially separate source means, adapted for producing a first signal therefrom;

b. plural input terminal means each usually coupled by way of an effectively separate variable impedance with said source means, operative to therefrom produce a plurality of effectively separate second signals each representing an electric value which is proportional to the amount of effective coupling impedance present between the said source means and each said input terminal means;

c. gate control signal source means producing at least a first gate signal and a second gate signal in substantially alternant sequence therefrom;

d. plural gated preamplifier means having separate second signal source inputs thereto, each coupled in a substantially separate way with a said input terminal means; further coupled with said gate control signal source; operative as a multiplex function to produce at output means therefrom a composite third signal comprising in repetitious succession at least a component third signal "A" which is essentially the combination of one said second signal gated between a state of maxima and minima value in sequential combination by said first gate signal, and a component third signal "B" which is essentially the combination of a second said second signal gated between a state of maxima and minima value in sequential combination by said second gate signal;

e. envelope detector means effectively coupled to said plural gated preamplifier means and responsive to said composite third signal so as to produce a detected substantially unipolar fourth signal therefrom the instantaneous value of which is proportional to the value of the corresponding component third signal value comprising the said composite third signal;

f. threshold detector means effectively coupled to said envelope detector means and selectively responsive to various instantaneous value components of the therefrom produced fourth signal values, being operative so as to further produce a correspondent fifth signal therefrom the value of which is substantially determined by the level of the said fourth signal values;

g. signal processor means coupled to said threshold detector means and operative to act upon said fifth signal so as to produce a sixth signal therefrom of proportional value and improved form;

h. indicative control means coupled to said signal processor means and further coupled with said gate control signal source, effectively operative as a demultiplexer function to produce at an output terminal means therefrom at least a first intelligencer signal value which is proportional to the combination of the effective first gate signal and that part of the said sixth signal value shown to be established by the effect of the said component third signal "A", and a second intelligencer signal value therefrom which is about proportional to the combination of the effective second gate signal and that part of the said sixth signal value shown to be established by the effect of the said component third signal "B"; and

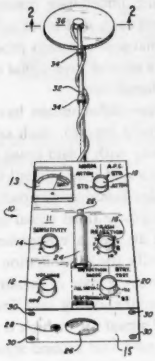
i. source of power coupled to each of the operative means comprising the translative intelligencer so as to effect operation thereof.

4,263,553

DISCRIMINATING METAL DETECTOR WITH COMPENSATION FOR GROUND MINERALS

Kenneth M. Cook, 456 E. Lincoln Ave., Palatine, Ill. 60067, and Alan W. Hametta, 404 E. Marshall, Arlington Heights, Ill. 60004

Filed May 30, 1978, Ser. No. 910,203
Int. Cl.[3] G01V 3/08
U.S. Cl. 324—327 10 Claims



1. A metal detector for discriminating between treasure and junk metal objects in a high mineral soil having a probe, a resonant circuit (with) including an inductive coil (in) within the probe, the improvement comprising:

means connected to the resonant circuit for generating a signal to drive the resonant circuit at a predetermined frequency higher than the natural resonant frequency of the resonant circuit, said means further including at least two attenuating coils of opposing magnetic fields operating at a substantially higher frequency than said inductive coil and operating without magnetic effect on said inductive coil, said attenuating coils positioned adjacent the inductive coil in the probe so that the attenuating coils are exposed to the same soil conditions as the inductive coil which results in the attenuating coils shifting in frequency proportionally to the shift in frequency of the inductive coil to avoid effects of ground minerals, said attenuating coils operating at a high enough frequency as to have a rise in frequency for ferrous and non-ferrous metal objects and a decrease in frequency for minerals; (and)

a frequency divider connected in series between the generating means and resonant circuit for lowering the higher frequency of the generating means to the lower predetermined frequency of the drive signal required to discriminate between treasure and junk metal objects(.);

said resonating circuit being driven by the drive signal to provide several different types of output signals, a first output signal when the probe is proximate mineral soil, a second output signal when the probe is proximate junk objects and a third output signal when the probe is proximate treasure objects; and

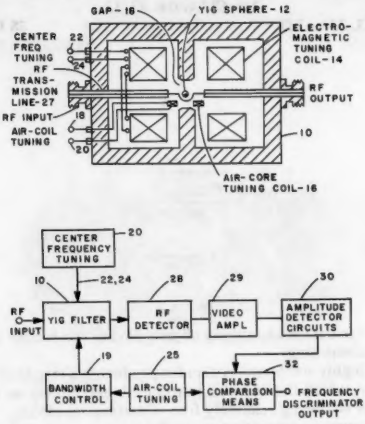
means responsive to said third output signal for indicating that the probe is sensing treasure in the mineral soil area.

4,263,554

FREQUENCY DISCRIMINATOR APPARATUS

William J. Keane, 3599 Ensalmo Ave., San Jose, Calif. 95118

Division of Ser. No. 631,708, Nov. 13, 1975, Pat. No. 4,127,819, which is a division of Ser. No. 418,232, Nov. 23, 1973, Pat. No. 3,921,085. This application Oct. 16, 1978, Ser. No. 951,497
Int. Cl.[3] H03K 9/06; H04B 1/16
U.S. Cl. 328—134 29 Claims



1. Ferrimagnetic frequency discriminator apparatus, comprising

ferrimagnetic filter means having an input and an output including magnetizing structure means having a single magnetic gap in which at least one ferrimagnetic resonator element is located,

means receiving signals applied to said discriminator apparatus for coupling said signals to said ferrimagnetic filter means input,

means coupled to said ferrimagnetic filter means for electronically cyclically sweeping the frequency of said ferrimagnetic filter means through a frequency range at a sample rate at least twice as great as the information rate of signals to be discriminated,

detector means having an input and an output, for detecting signals at the output of said ferrimagnetic filter means,

means for connecting the output of said ferrimagnetic means to the input of said detector means, and

means coupled to said sweeping means and to the output of said detector means for comparing the timing relationship of said sweeping means and said detector output to generate a discriminator output wherein the discriminator output amplitude versus input signal frequency characteristic is substantially linear.

4,263,555

SIGNAL DETECTION SYSTEM

George W. Hunka, Bellmawr, N.J., assignor to RCA Corporation, New York, N.Y.

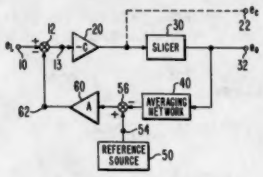
Filed Jun. 15, 1979, Ser. No. 48,826
Int. Cl.[3] H03K 5/153
U.S. Cl. 328—165 9 Claims

1. A system for detecting repetitive input signals superimposed upon offset potential levels for providing an output signal having a waveform substantially independent of said offset potential, and substantially independent of the amplitude and duration of said input signals, said system comprising:

a forward signal path for conducting said input signals from an input terminal to an output terminal;

slicing-amplifying means included in said forward signal path and having an input connection for receiving the

difference between said input signals and a balance signal, and an output connection supplying amplified signals to said output terminal in response to said difference signals, the amplitude excursions of said amplified signals being clipped in one direction sense at a first potential level and in the other direction sense at a second potential level, said first and second potential levels being substantially constant with respect to a first reference potential;



a feedback path connected between said output terminal and said input terminal to form a degenerative feedback loop;

means included in said feedback path for generating balance signals in proportion to the amplified difference between the average value of said output signal and a standardizing potential; and

means coupled between said input terminal and said balance signal generating means for subtractively combining said input signals and said balance signals.

4,263,556

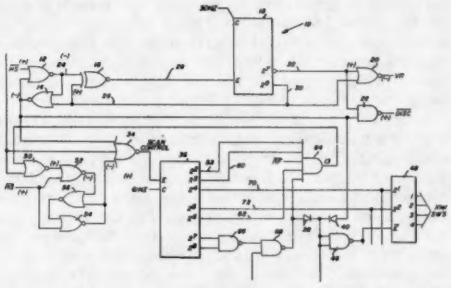
MONOSTABLE SYSTEM

Duane R. Bolgiano, Bala Cynwyd; Joel M. Benjamin, Jr., Pottstown, and Victor Meyer, Jr., Telford, all of Pa., assignors to International Mobile Machines Incorporated, Bala Cynwyd, Pa.

Division of Ser. No. 755,615, Dec. 29, 1976, Pat. No. 4,130,731. This application Oct. 16, 1978, Ser. No. 951,736

Int. Cl.³ H03K *3/033*

U.S. Cl. 328—207 **1 Claim**



1. A monostable system comprising a source of control signal applied to a flip flop formed of cross coupled NOR gates, said flip flop having an output which is applied to an input of an exclusive NOR gate, an output of the exclusive NOR gate being connected to provide an enable signal to a counter, said counter thereby being enabled to count pulses from a clock system connected thereto, said counter having a pair of outputs connected as inputs to a NOR gate, the output of said NOR gate providing the output of said system, one of said pair of outputs being connected as a second input to the exclusive NOR gate and as an input to the flip flop.

4,263,557

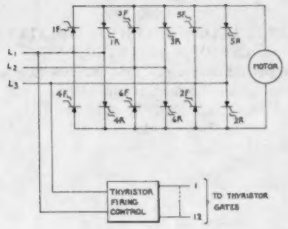
POWER CONVERTER CONTROL

Willard B. Jarvinen, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Continuation of Ser. No. 743,863, Nov. 22, 1976, abandoned. This application Jul. 25, 1978, Ser. No. 927,795

Int. Cl.³ H02P *5/16*

U.S. Cl. 318—341 **16 Claims**



1. A circuit for generating signals for rendering conductive the controlled rectifiers of a power conversion system to thereby control the power supplied to a load from a source of alternating current voltage comprising:

(a) means to sense a designated point in the cycle of the source voltage and to supply an output signal in response thereto;

(b) means responsive to said output signal to develop multiple bit address signals representing a timephase relationship with respect to said designated point;

(c) a memory system having a plurality of selectively addressable, multiple bit storage locations to be addressed by said address signals, individual ones of said storage locations each containing predetermined data designating the firing sequence and time of firing the rectifiers of the power conversion system; and,

(d) means responsive to the contents of the addressed locations to develop signals for the selective rendering conductive of individual ones of said rectifiers.

4,263,558

PHASE-SELECTIVE AMPLIFIER

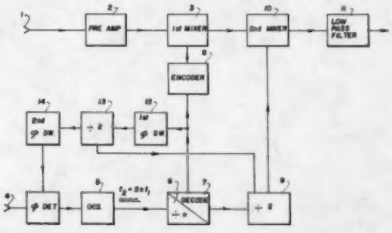
Norbert Mitter, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,149

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832920

Int. Cl.³ H03F *3/38*

U.S. Cl. 330—10 **5 Claims**



1. A phase-selective amplifier comprising: a first mixer stage, the amplification of which can be switched; amplification switches connected to said first mixer stage to switch the amplification thereof to n/2 switching conditions corresponding to an approximately sinusoidal relationship; a second mixer

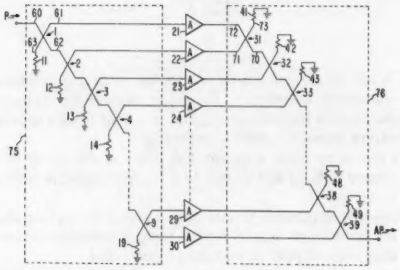
stage connected to receive signals from the first mixer stage, the amplification of the second mixer stage also being capable of being switched; a second amplification switch to switch said amplification of said second mixer stage to two equal values, one positive and the other negative; a voltage-controlled oscillator; a phase control circuit connected to said oscillator; and logic elements connecting said amplification switches of said mixer stages to said phase control circuit.

4,263,559

N-WAY SERIES CONNECTED QUADRATURE POWER DIVIDER AND COMBINER

Pang T. Ho, Mountain View, Calif., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Jan. 26, 1979, Ser. No. 6,816
Int. Cl.³ H03F *3/60*
U.S. Cl. 330—53 **8 Claims**



1. A power coupler microstrip circuit operable at microwave frequencies for providing an equal power distribution among an arbitrary number N paths comprising:

N−1 series-connected quadrature directional couplers wherein the power division ratio of each Jth coupler is $1/(N-J+1)$;

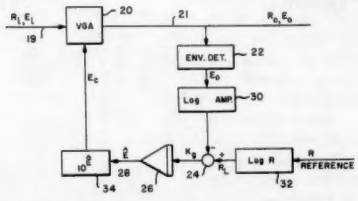
where J is an integer having a value of $1 \leqq J \leqq N-1$.

4,263,560

LOG-EXPONENTIAL AGC CIRCUIT

Dennis W. Ricker, Linden Hall, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 6, 1974, Ser. No. 478,797
Int. Cl.³ H03G *3/20*
U.S. Cl. 330—129 **4 Claims**



1. A non-linear, automatic-gain-control circuit comprising:

variable-gain amplifier means to which an input signal is applied;

envelope-detecting means for detecting the envelope of the output from said variable-gain amplifier means;

means for converting the envelope value to its logarithmic value;

means for generating an integrated error signal from said logarithmic envelope;

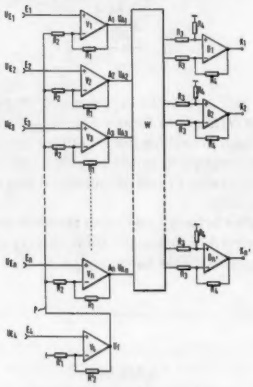
means for converting this error signal to its exponential value and applying this signal to said variable-gain amplifier for controlling the gain of said amplifier.

4,263,561

AMPLIFIER ARRANGEMENT WITH SUPPRESSION OF SPURIOUS SIGNALS

Horst Weber, Freiburg im Breisgau, Fed. Rep. of Germany, assignor to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,968
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2830033
Int. Cl.³ H03D *1/00*
U.S. Cl. 330—149 **6 Claims**



1. An improved amplifier arrangement for a plurality of individually generated desired signals to be processed, upon which useful signals a relatively stronger noise signal is superimposed, comprising a plurality of like single amplifiers, each having a positive and a negative input terminal, wherein each positive input terminal receives a specific useful signal having the spurious signal superimposed thereon, and wherein each negative input terminal is connected to the output terminal of the respective amplifier via an associated first resistor and to a bus line common to all single amplifiers at a common potential via an associated second resistor, the ratio of resistance values between interconnected first and second resistors being the same for all single amplifiers, wherein the improvement comprises: an additional amplifier having a positive and a negative input terminal, which additional amplifier has its output terminal connected to the bus line, the output terminal of the additional amplifier being connected to the negative input terminal via a third resistor, the negative input terminal in turn being connected to a reference potential through a fourth resistor, while one of the useful signals is applied to the positive input terminal of the additional amplifier, the ratio between the resistance values of the third and fourth resistors being equal to the reciprocal of the ratio of the resistance values between the interconnected first and second resistors.

4,263,562

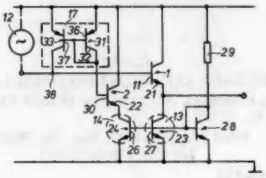
HIGH INPUT IMPEDANCE TRANSISTOR AMPLIFIER

Hartmut Seiler, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 3, 1979, Ser. No. 63,411
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833996
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—257 **7 Claims**

1. In a transistor amplifier circuit receiving input signals from a high impedance source (12), said transistor amplifier

circuit having a source of electrical energy, an amplifier transistor (1) having an emitter, base, and collector, first connecting means for connecting said amplifier transistor to said source of electrical energy, first current supply means (13) connected to said amplifier transistor for supplying a predetermined emitter bias current thereto, a reference transistor (2) substantially identical to said amplifier transistor and having an emitter, base and collector for creating a reference base current in response to a reference emitter current supplied thereto, and additional circuit means (17) connected to said base of said



amplifier transistor and said base of said reference transistor for furnishing an amplifier transistor base current equal to said reference base current to said base of said amplifier transistor: the improvement comprising

second connecting means independent of said first connecting means for connecting said reference transistor to said source of electrical energy; and

second current supply means (14) connected to said reference transistor for supplying a reference emitter current equal to said emitter bias current to said emitter of said reference transistor.

4,263,563

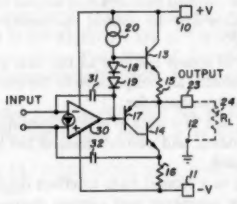
AMPLIFIER OUTPUT STAGE DISTORTION REDUCTION

James S. Congdon, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 11, 1979, Ser. No. 56,489

Int. Cl.[3] **H03F** *3/26, 3/45*

U.S. Cl. 330—265 **6 Claims**



1. An amplifier circuit comprising:

an output stage including at least a pair of like conductivity type emitter ballasted power transistors coupled in series between positive and negative power supply terminals;

means for coupled to one of said power transistors to create a composite pair;

means for biasing said output transistors to approximate class B operation;

amplifier stage means including a frequency compensation capacitor for driving said output transistors; and

negative feedback means including a distortion compensation capacitor coupled between said composite pair and said amplifier means whereby the distortion created in said output transistors is compensated.

4,263,564

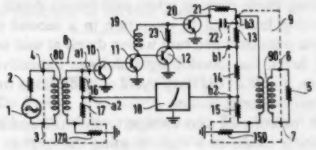
WIDE-BAND TRANSISTORIZED AMPLIFIER

Jean-Luc Lafon, Le Perreux sur Marne, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Mar. 20, 1979, Ser. No. 22,200

Int. Cl.[3] **H03F** *1/08, 3/19*

U.S. Cl. 330—293 **3 Claims**



1. A wide-band transistorized amplifier including two line couplers interconnected by a cascade of amplification stages and a negative feed-back two port network connecting the output from the last stage of the cascade to the input to the first, and including a transistorized feed forward correction stage connected in parallel across one of the end stages of the cascade connected to one of the line couplers, wherein the cascade stage across which the correction stage is connected in parallel introduces a phase inversion, and wherein the correction stage includes a common-emitter connected transistor whose base is connected to the input to the said end stage of the cascade via an inductive phase-shift impedance and also to the output from the said end stage of the cascade via a resistor, the collector of said transistor of the correction stage being connected to one terminal of the output coupler via a parallel connected resistor and capacitor, so that the wanted signal is cancelled at the input to the transistor of the correction stage and so that the non-linear products generated by the last stage of the cascade, which constitute the only signal amplified by the correction stage, are cancelled at the level of a load connected to the output of the amplifier.

4,263,565

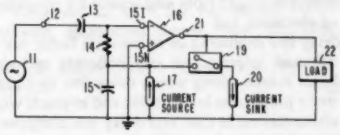
AMPLITUDE LIMITER WITH AUTOMATIC DUTY CYCLE CONTROL FOR USE IN A PHASE-LOCKED LOOP

Brian Astle, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,944

Int. Cl.[3] **H03L** *7/06;* **H03K** *3/017, 5/08*

U.S. Cl. 331—15 **5 Claims**



4. In a phase lock loop system including a voltage controlled oscillator, a phase comparator, means responsive to an output of said voltage controlled oscillator for supplying a local oscillation input to said phase comparator, a signal path for supplying a reference signal input to said phase comparator, and means responsive to an error voltage output of said phase comparator for altering the output of said voltage oscillator in a sense opposing deviations from a predetermined phase relationship between said reference and local oscillation inputs to said phase comparator, for use with a source of AC reference signals of a reference frequency but undesirably subject to amplitude variations; apparatus comprising:

signal limiting means, interposed in said signal path and having an input terminal disposed to receive said AC reference signals from said source, for forming said reference signal input for said phase comparator in the form of waves of said reference frequency alternately dwelling at respective first and second limiting levels with relatively rapid transitions therebetween;

means, responsive to said reference signal input formed by said limiting means and subject to operation in a first state during those periods when said waves dwell at said first limiting level and to operation in a second state during those periods when said waves dwell at said second limiting level, for developing a voltage indicative of departures, if any, of the duty cycle of said waves from a predetermined norm; and

means for utilizing said voltage to alter the operation of said limiting means in a sense tending the oppose said departures;

wherein said voltage developing means includes:

a capacitance; and

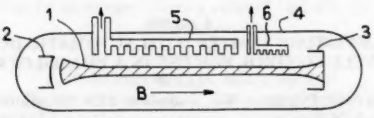
switching means, responsive to said reference signal input formed by said limiting means, for causing modification of the state of charge of said capacitance in a first sense during those periods when said waves dwell at said first limiting level, and for causing modification of the state of charge of said capacitance in a second sense, opposite to said first sense during those periods when said waves dwell at said second limiting level.

4,263,566

BACKWARD WAVE OSCILLATOR TUBE UTILIZING SUCCESSIVE DELAY LINE SECTIONS FOR INCREASED POWER

Pierre Guenard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 9, 1979, Ser. No. 28,548
Claims priority, application France, Apr. 11, 1978, 78 10615
Int. Cl.[3] H01J *25/40*
U.S. Cl. 331—82 **3 Claims**



1. A backward wave oscillator which comprises:

a source of a beam of electrons;

means for focusing said beam of electrons;

a collector spaced from said source for receiving said beam of electrons; and

a delay line exhibiting an attenuation factor per unit length, disposed intermediate said collector and said electron beam source, along which delay line an electromagnetic wave propagates in operation and interacts with the beam, characterized in that: said delay line comprises a first and a second delay line section;

said first delay line section modulating the electron beam as it passes thereunder and having a length such that due to its attenuation factor per unit length substantially no energy is available at the end thereof closest to said electron beam source as a result of said interaction, the only result of said interaction being a modulation of the electron beam;

said second delay line section substantially shorter than said first delay line section being incapable of sustaining oscillations in the absence of the priorly modulated electron beam, the length of said second delay line section being such that due to its attenuation factor per unit length oscillations under interaction with the electron beam priorly modulated by the first delay line section are generated,

said second delay line section having a structure homothetic with the first in the ratio 1/n, where n is an integer, said backward wave oscillator further comprising;

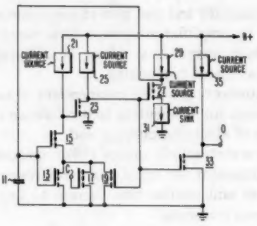
means, coupled to said second delay line section, for extracting oscillatory energy from the backward wave oscillator, the oscillator supplying in that means an electromagnetic energy on the n^{th} harmonic of the frequency of the predominant component of the wave in the first line section.

4,263,567

VOLTAGE CONTROLLED OSCILLATOR

Brian Astle, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,078
Int. Cl.[3] H03K *3/282*
U.S. Cl. 331—111 **5 Claims**



1. A relaxation oscillator subject to frequency control in response to an external control signal, comprising:

first and second transistors, each having first and second electrodes with a controlled conduction path therebetween and having a control electrode, the conductivity of the controlled conduction path of each transistor being subject to variation in response to variations of the potential between its second and control electrodes; the first electrode of said first transistor being connected to the second electrode of said second transistor;

a capacitance coupled between said second electrode of said first transistor and the control electrodes of both of said transistors;

charge control means coupled to the first electrode of the second transistor and responsive to the current demand of said second transistor for

(a) operating in a first state to effect charging of said capacitance whenever said current demand lies below a threshold level, and

(b) operating in a second state to effect discharging of said capacitance whenever said current demand exceeds said threshold level;

variable impedance means, responsive to said external control signal and to the state of operation of said charge control means, for exhibiting:

(1) an impedance of a value which is variable over a given range of values in dependence upon the magnitude of said external control signal, when said charge control means operates in a given one of said operating states; and

(2) an impedance of a substantially constant value, less than said given range of values and substantially independent of magnitude of said external control signal, when said charge control means operates in the other of said operating states; and

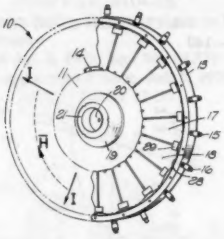
means for coupling said variable impedance means in shunt with the controlled conduction path of said first transistor.

4,263,568

LARGE SCALE LOW-LOSS COMBINER AND DIVIDER

Jeffrey T. Nemit, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,481
Int. Cl.[3] H01P 5/12
U.S. Cl. 333—127 6 Claims



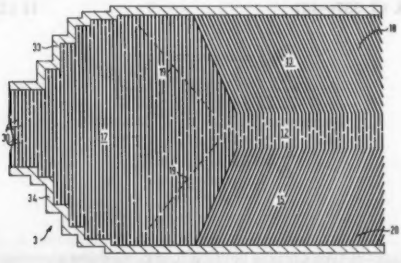
1. A radio-frequency power divider and combiner comprising:
a fixed structure including first and second parallel plates;
branching means comprising a plurality of conductive loops symmetrically spaced, extending radially outward from a first circle within a central area between said plates, and outwardly abutting a second circle;
a feed electrically symmetrical in planes parallel to said first and second plates for coupling to the volume within said central area between said first and second plates to produce a relatively uniform dominant E mode therein, said feed connecting through one of said plates substantially at the center of said first circle;
means comprising a branch port connected to each of said loops at the open end thereof within and adjacent said second circle, said loops otherwise providing closed current paths in planes generally normal to said plates;
a common port connected to said feed;
and spurious waveguide mode suppression means comprising a plurality of resistors, one of said resistors being between each adjacent pair of said loops inside and adjacent to said second circle.

4,263,569

SURFACE ACOUSTIC WAVE ARRANGEMENT WITH IMPROVED SUPPRESSION OF SPURIOUS SIGNALS

Frank Moellmer, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 15, 1979, Ser. No. 66,665
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839851
Int. Cl.[3] H03H 9/145, 9/25, 9/64, 9/42
U.S. Cl. 333—151 8 Claims



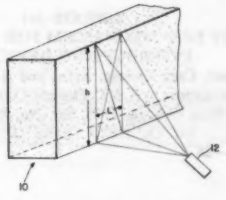
1. A surface acoustic wave arrangement, comprising: a piezo substrate; an input transducer and an output transducer on the piezo substrate, at least one of the transducers having weighted transducer fingers which overlap up to a given maximum width, some of the individual transducer fingers each having an inactive length portion which functions as a dummy finger; and some of the inactive length portions at least partially within said maximum width in a propagation direction of surface waves being aligned in slanted fashion relative to said propagation direction of surface waves.

4,263,570

OPTICAL PHASE SHIFTER

Alfred P. De Fonzo, Alexandria, and Thomas G. Giallorenzi, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1978, Ser. No. 954,376
Int. Cl.[3] H01P 1/18, 9/00, 3/00
U.S. Cl. 333—157 13 Claims



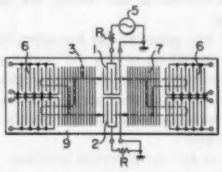
1. An optically variable phase shifter comprising:
a source of light; and
a waveguide having broad and narrow wall dimensions measured in a plane transverse to the direction of electromagnetic wave propagation therethrough, said waveguide consisting essentially of an interaction material having an optical absorption edge not greater than the wavelength of said light, said material being of a type which forms a plasma of electron-hole pairs when illuminated by said source of light, said plasma decreasing the resistivity of said interaction material and thereby changing the wave number of the wave for altering the speed at which said wave propagates in the waveguide.

4,263,571

SURFACE ACOUSTIC WAVE FILTER

Yasuaki Kinoshita, Hachioji, and Mitsutaka Hikita, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,736
Claims priority, application Japan, Nov. 15, 1978, 53-156152[U]
Int. Cl.[3] H03H 9/64, 9/145; H01L 41/16
U.S. Cl. 333—194 4 Claims



1. A turn reflector type of surface acoustic wave filter comprising a transmitting transducer having a group of thin film finger or stripe electrodes on the surface of a piezo-electric substrate for converting a first electric signal to a surface acoustic wave, a receiving transducer having a group of thin

film finger or stripe electrodes on the substrate for converting said surface acoustic wave to a second electric signal, and reflectors provided at both sides of said transmitting and receiving transducers; wherein the number N of the thin film finger electrode pairs in at least one of said transmitting and receiving transducers is selected so as to satisfy $N \approx F/k^2$, where F is the constant determined by the material of said substrate and "k^2" is the electro-mechanical coupling coefficient.

4,263,572

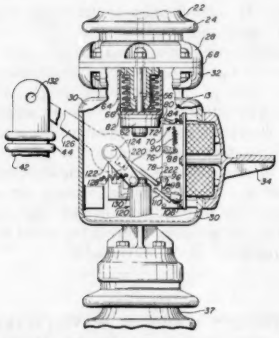
SHUNT TRIP MECHANISM FOR A CIRCUIT INTERRUPTING DEVICE

Joseph Bernatt, Casa Grande, Ariz., and Karel E. Vojta, Chicago, Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Oct. 16, 1978, Ser. No. 951,681

Int. Cl.³ H01H *73/00, 75/02*

U.S. Cl. 335—26 **24 Claims**



1. A shunt trip mechanism for use with a high-voltage circuit interrupting device, the device being of the type having an operating mechanism at line potential which selectively latches stored energy to maintain contacts closed or releases the stored energy to open the contacts in response to a predetermined condition of the current in the circuit; the shunt trip mechanism comprising:

first means at line potential (a) for selectively effecting release of the stored energy by the operating mechanism to open the contacts and (b) for both reclosing the opened contacts and restoring the energy upon such reclosing, the first means being operable independently of the operating mechanism; and

second means at ground potential insulated from the operating mechanism and the first means for operating the first means to (a) cause the release of the stored energy in response to the occurrence of a predetermined event and (b) reclose the open contacts and restore the energy in response to manual manipulation thereof, whether the stored energy was released by operation of the operating mechanism or of the first and second means.

4,263,573

THERMAL SWITCH WITH A VITREOUS METAL ALLOY SWITCHING ELEMENT

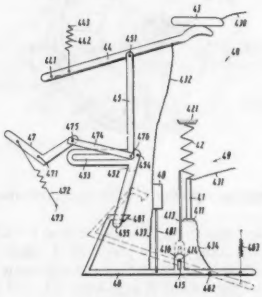
Keith Melton, Busslingen, and Olivier Mercier, Ennetbaden, both of Switzerland, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,340

Claims priority, application Switzerland, Dec. 21, 1977, 15758/77

Int. Cl.³ H01H *61/04, 61/06*

U.S. Cl. 337—140 **28 Claims**



1. Thermal switch, comprising a switching element formed of a coherently structured vitreous metal alloy, said switching element being in a vitreous-amorphous state and having a higher strength at a lower first temperature range, and in a crystalline state and having a lower strength at a higher second temperature range, tensioning means cooperating with said switching element for exerting a force thereon which is sufficient to break said switching element in said crystalline state and insufficient to break said switching element in said vitreous amorphous state, an electrical contact movable between an open and a closed position, latching means for moving to said open position, means for locking said contact in said open position, and a push rod operatively connected from said switching element to said latching means for locking said contact in said open position in response to the breaking of said switching element in the vicinity of a transition from said first to said second temperature range.

4,263,574

SLIT TYPE CURRENT LIMITING FUSE

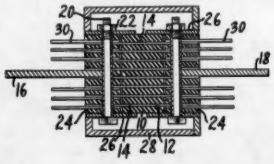
Teijiro Mori; Yuichi Wada, and Suenobu Hamano, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1978, Ser. No. 937,745

Claims priority, application Japan, Mar. 8, 1978, 53-30073[U]; Mar. 8, 1978, 53-30075[U]

Int. Cl.³ H01H *85/12*

U.S. Cl. 337—161 **11 Claims**



1. A slit type current limiting fuse comprising a plurality of solid electrically insulating members stacked on one another, a plurality of slits formed in superposed relationship of said solid

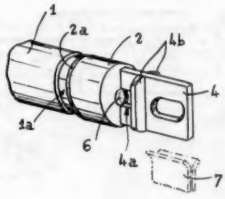
electrically insulating members, and a fusible member disposed within each of said slits to be responsive to a flow of overcurrent therethrough to be blown out, all said fusible members being electrically interconnected in parallel circuit relationship and said fusible members having respective portions extending beyond said insulating members to define heat dissipation fins.

4,263,575

FUSE CARTRIDGES

Jean-Claude Fontaine, Ecully, France, assignor to Lucien Ferraz & Cie., Lyons, France

Filed Jul. 3, 1979, Ser. No. 54,529
Claims priority, application France, Jul. 6, 1978, 78 21324
Int. Cl.[3] H01H *85/30*
U.S. Cl. 337—241 **1 Claim**



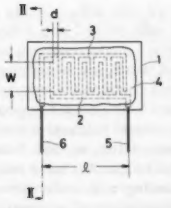
1. In a fuse cartridge having a tubular insulating body with a central axis, the ends of the body being closed by metallic heads respectively carrying flat faced contact blades extending axially from the heads in opposite directions and disposed to support the cartridge in spaced clamps having aligned blade-receiving slots, and the cartridge having an axially disposed bore in one head containing an indicator button operative to protrude axially from the head when the fuse is blown, the improvements wherein the contact blade which extends from said one head has a closed-end notch extending from the bore and aligned therewith and terminating partway along the blade to provide a longitudinal clearance for the indicator button when protruding from the head; and wherein the notched blade has a transverse rib located adjacent to the closed end of the notch and extending transversely across the blade and standing out from at least one face of the blade to a height greater than the thickness of the blade.

4,263,576

HUMIDITY SENSITIVE DEVICE

Michihiro Murata, Kyoto, and Shinsei Okabe, Takatsuki, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 27, 1979, Ser. No. 52,502
Claims priority, application Japan, Jul. 10, 1978, 53-84209; Jul. 18, 1978, 53-87913
Int. Cl.[3] H01L *7/00*
U.S. Cl. 338—35 **35 Claims**



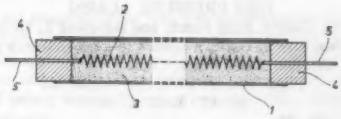
1. A humidity sensitive device, comprising:
an insulating substrate having a major surface; first and second electrodes formed
first and second electrodes formed on said major surface of said insulating substrate and spaced from each other;
first and second external connection terminals electrically coupled to and for external connection of said first and second electrodes respectively; and
a humidity sensitive film formed on said major surface of said insulating substrate and covering at least the position of said major surface located between said electrodes, said humidity sensitive film comprising an inorganic polymer mainly including zirconium, and an organic polymer having compatibility with said inorganic polymer mainly including zirconium.

4,263,577

ELECTRIC TUBULAR HEATING BODY AND PROCESS FOR ITS MANUFACTURE

Jens Bauchert, and Ernst Brechner, both of Kandel, Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,442
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825980
Int. Cl.[3] H01C *1/03*
U.S. Cl. 338—242 **18 Claims**



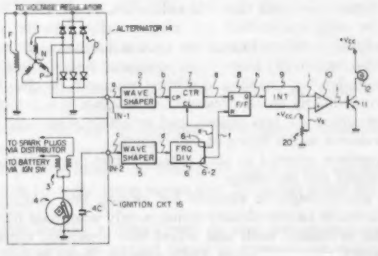
1. Electrical tubular heating element with a jacket tube formed from a single bent strip of material, an electrical resistance heating element running in the jacket tube, and an electrically insulating embedding material surrounding the resistance heating element, characterized by the fact that the embedding material is composed of a fine-grained base material made of a ceramic material with a polysiloxane selected from the group consisting of alkylpolysiloxane and arylpolysiloxane added, and by the fact that the longitudinal side areas of said strip are joined solely by being bent one over the other to form a closed cross-section and to rest flat against one another.

4,263,578

BELT DRIVE CONNECTION MALFUNCTION SENSOR

Takao Fukuhara, Yamato, and Kunihiro Saito, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jun. 4, 1979, Ser. No. 45,091
Claims priority, application Japan, Jun. 8, 1978, 53-68312; Jun. 8, 1978, 53-68324
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—52 R **10 Claims**



1. A belt drive connection malfunction sensor for issuing an alarm signal when the engine power of an engine is not properly transmitted via a belt to an alternator, comprising:

(a) first means for producing a pulse train signal synchronous with a pulsating voltage generated by the alternator;
(b) second means for producing a reference timing signal synchronous with rotation of a crankshaft of the engine;
(c) third means responsive to said pulse train signal and said reference timing signal for producing an output signal when the number of the pulses of said pulse train signal reaches a predetermined value during a period of time defined by said reference timing signal;
(d) means for averaging said output signal of said third means; and
(e) alerting means responsive to said output signal of said third means which has been averaged by said averaging means,

wherein said averaging means comprises:

resettable means responsive to the output signal of said third means which has been averaged by said averaging means to be set and to the output signal of said second means to be reset,

an integrator responsive to the output signal of said resettable means, and

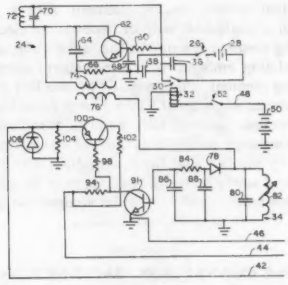
a comparator responsive to the output signal of said integrator.

4,263,579

TIRE PRESSURE ALARM

Donald M. Corgan, Long Beach, and Raymond L. Grimes, Los Alamitos, both of Calif., assignors to CGS Research and Development, Inc., Long Beach, Calif.

Filed Nov. 15, 1979, Ser. No. 94,713
Int. Cl.[3] B60C *23/04*
U.S. Cl. 340—58 **9 Claims**



1. A tire pressure alarm system for a vehicle having a frame with an operator compartment and mounted on wheels with inflatable tires and having an electrical storage battery comprising:

a compact transmitter including a low pressure responsive, fixed frequency radio signal generator with a nominal input power less than 100 milliwatts, an electrical battery for said transmitter and magnetically actuable switch closure contacts located between said signal generator and said transmitter battery, all positioned on a vehicle wheel and having enabling electrical contacts in circuit and operable by an air pressure check valve of a vehicle tire mounted on said wheel, and rotatable with said wheel relative to the frame of said vehicle,

a receiver secured to said vehicle frame proximate to said wheel and including:

an electromagnetic element for closing said magnetically actuable switch closure contacts only when said transmitter is rotated with said wheel into proximity therewith, and a radio frequency diode detector tuned to said radio frequency signal generator,

an alarm located in the cab of said vehicle with a wired connection to said receiver, and

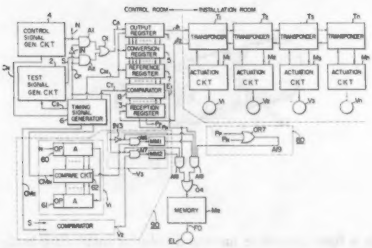
a power connection leading from said vehicle electrical storage battery to said electromagnetic element and including a normally open disabling switch therein which is closed by a mechanism associated with vehicle operation.

4,263,580

MONITOR SYSTEM FOR OPERATION OF SOLENOID OPERATED DEVICES

Takao Sato, Ibaraki, and Setsuo Arita, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 22, 1977, Ser. No. 826,839
Claims priority, application Japan, Aug. 23, 1976, 51/99666
Int. Cl.[3] H04Q *5/00*; G05B *11/00*; H04L *11/15*
U.S. Cl. 340—163 **4 Claims**



1. A monitor system for monitoring the operation of solenoid operated devices comprising:

a transmitter at a control site for assembling a command word having at least an address signal and an operation signal and for transferring said command word to a data path at intervals of first time T_1;

a plurality of solenoid operated devices each having a coil connected across an ac power source through switching means, said solenoid operated devices each being switched between open state and closed state by closing and switching means when said coils are energized;

a plurality of receivers at a remote site corresponding to respective solenoid operated devices, said receivers generating a signal for closing the corresponding switching means during second time $T_2(T_2 \cong T_1)$ when the address signal of the command word from said data path coincides with that of said corresponding solenoid operated device;

a transmitter at said remote site for assembling an acknowledge word including the address signal of said corresponding solenoid operated device operated in accordance with said command word, and an operation status signal indicating the operation status of said corresponding coil, and for transmitting said acknowledge word to said control site;

a monitor circuit at said control site for predicting from said command word said acknowledge word which is to be sent back to said control site when said corresponding solenoid operated device operates properly in response to said command word, for assembling reference words on the basis of said command words, and for comparing said reference word with said acknowledge word to monitor the operation of said solenoid operated devices

wherein said transmitter at said remote site comprises a series circuit of a capacitor and a resistor connected across said corresponding coil, a discrimination means responsive to the magnitude of a signal corresponding to an average value of the current flowing in said series circuit, a pulse detection means for detecting a pulse current flowing in said series circuit, and a transmission means for assembling said acknowledge word on the basis of signals

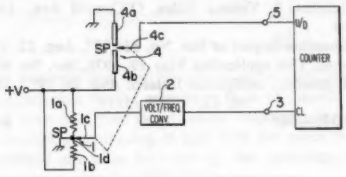
from said discrimination means and said pulse detection means and for transferring said acknowledge word.

4,263,581

MANUAL TUNING PULSE GENERATOR

Masanao Okatani; Hiroshi Onishi; Yoshiaki Ishibashi; Reisuke Sato; Hisashi Suganuma; Tomohisa Yokogawa; Yoshiharu Ueki; Haruo Kama; Tadashi Kosuga, and Tadashi Ogawa, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,226
Claims priority, application Japan, Jun. 20, 1977, 52-73119
Int. Cl.[3] H03J *5/04, 5/00;* **H03K** *21/30*
U.S. Cl. 340—168 B **5 Claims**



1. A manual tuning pulse generator for use in an electronic tuning control device of a radio receiver having an up/down counter with a counting direction control input and a clock input, comprising: a first manual means movable between a first position for producing a first signal, a second position for producing a second signal, and a neutral position for producing a neutral signal, a second manual means ganged with said first manual means for producing a variable signal and means responsive to said variable signal to produce a clock pulse signal having a variable frequency corresponding thereto, said first manual means being connected to the counting direction control input of the up/down counter and said variable signal producing means being connected to the clock input of the up/down counter as a clock pulse signal so that the up/down counter counts up said clock pulse signal upon receiving said first signal, counts down upon receiving said second signal and performs no counting upon receiving said neutral signal, said first manual means being mechanically biased toward said neutral position whereby said first manual means will automatically return to its neutral position when released and counting by said up/down counter will cease.

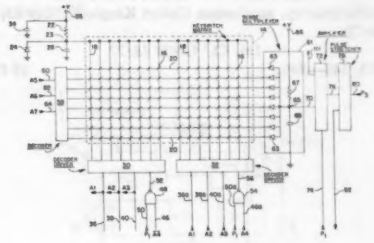
4,263,582

KEYBOARD WITH AN EXTERNALLY PROGRAMMABLE REPEAT RATE AND REPEAT DELAY RATE COUNTER

Steve Dumbovic, Elmhurst, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 24, 1979, Ser. No. 69,473
Int. Cl.[3] G06F *3/02*
U.S. Cl. 340—365 S **5 Claims**

1. An electrical keyboard comprising a plurality of selectively operable keyswitch matrix elements each having an actuated state and an unactuated state, and output means for scanning and sensing the state of each of said keyswitch matrix elements in a sequential cyclic manner comprising a master counter of N count stages, wherein N is a number sufficiently large so that each keyswitch matrix element may be associated with a unique count of said master counter, output encoding means for producing an initial output code that is derived from the count of said master counter which is associated with a particular keyswitch matrix element that has been actuated, repeat means for selectively repeating said output code comprising timing means for controlling the delay between said initial output code and a repeated output code wherein said repeat means comprises a programmable delay timing counter having M serially-coupled counting stages wherein at least a plurality of said counting stages may be individually initially programmed, where M is selected in accordance with the range of the desired delay, gate encoding means for encoding preselected counts of said master counter in order to provide a separate gating signal for each stage of said delay timing counter which is capable of being programmed and gating



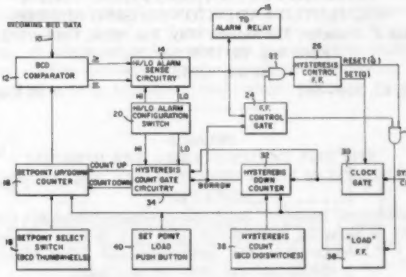
means for controlling the selective programming of said programmable stages in accordance with said gating signals and upon the application of an externally supplied program permit signal to said gating means simultaneously with the application of said gating signals from said gate encoding means to said gating means.

4,263,583

DIGITAL ALARM SYSTEM WITH VARIABLE ALARM HYSTERESIS

Richard Wyckoff, Box 81, R.F.D. #2, Wiscasset, Me. 04578

Filed Dec. 19, 1978, Ser. No. 971,097
Int. Cl.[3] G08B *23/00;* **H03K** *21/34*
U.S. Cl. 340—501 **23 Claims**



1. A digital alarm system for monitoring a variable signal having a variable alarm hysteresis capability comprising:

input means providing digital signals representative of a process variable,

means providing a preset count level signal representative of an alarm condition,

comparator means for comparing the process variable signals from the input means and the preset count level signal,

means sensing a coincidence in said comparator, and for generating an output signal in response to said coincidence,

means for resetting said preset count level signal to a second value upon occurrence of said coincidence output signal, and

alarm means responsive to said output signal for providing

an alarm that said process variable signal has exceeded said preset count level signal value.

4,263,584

REGENERATIVE FEEDBACK INTRUDER ALARM APPARATUS

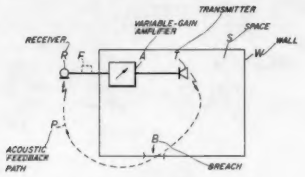
Ernst Spirig, P.O. Box 160, Speerstrasse 14, CH-8640 Rapperswil, Switzerland

Filed Oct. 24, 1978, Ser. No. 954,324

Claims priority, application United Kingdom, May 15, 1978, 19604/78

Int. Cl.³ G08B *13/22*

U.S. Cl. 340—566 **15 Claims**



1. An intruder alarm apparatus for producing an alarm when an intruder enters a closed space under supervision and enclosed by wall means, comprising a signal loop including transmitter means and receiver means, one said means being inside and the other said means being outside the closed space, respectively, said transmitter means having a signal input and said receiver means having a signal output, and amplifier means having an input connected to the signal output of the receiver means and an output connected to the signal input of the transmitter means, said signal loop having a gain greater than unity for supporting oscillation only when the wall means is breached, thereby breaking the integrity of the closed space.

4,263,585

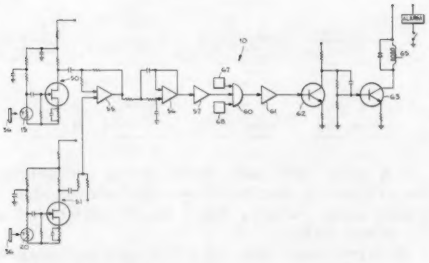
INTRUSION DETECTION SYSTEM WITH A SEGMENTED RADIATION SENSING MIRROR

Hans J. Schaefer, 312 Marich Way, Los Altos, Calif. 94022

Filed Aug. 13, 1979, Ser. No. 65,920

Int. Cl.³ G08B *13/18*

U.S. Cl. 340—567 **30 Claims**



15. An intrusion detection system comprising:

(a) optical sensing means for sensing radiation energy in an area under surveillance, said optical sensing means comprising a plurality of pairs of reflecting segments, said pairs of reflecting segments being arranged to form a concave reflecting surface, the reflecting segments of each pair of reflecting segments being formed with the same curvature in one direction and with the same curvature in another direction, each of said reflecting segments having the same curvature in one direction, said pairs of reflecting segments having different curvatures in said other direction;

(b) a plurality of radiation sensing elements on which said optical sensing means impinges radiation energy for producing detection signals;

(c) circuit means connected to said radiation sensing elements for comparing detection signals to produce an alarm activating signal; and

(d) an alarm connected to said circuit means and activated by said circuit means in response to said circuit means producing an alarm activating signal.

4,263,586

PRESSURE OPERATED ELECTRIC SWITCH AND ALARM SYSTEM USING SUCH SWITCH

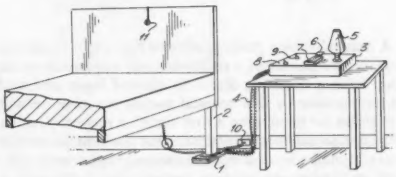
Noel Nicholas, 6, Verona Villas, O'Connell Ave., Limerick, Ireland

Continuation-in-part of Ser. No. 826,957, Aug. 22, 1977, abandoned. This application May 19, 1978, Ser. No. 907,461

Claims priority, application Ireland, Aug. 26, 1977, 1867/77

Int. Cl.³ G08B *13/14*

U.S. Cl. 340—568 **6 Claims**



1. A pressure-operated electric switch for use in conjunction with a hospital bed and adapted for insertion under one leg of the bed to signal the absence of a patient therein, the electric switch comprising a portable housing having a base, a generally horizontal pressure plate mounted in the housing for vertical movement relative to the base, the pressure plate having an upper surface, spring means extending upwardly from a supporting surface in the housing below the pressure plate and biasing the pressure plate upwards, the pressure plate and the spring means being unitary and comprising a single leaf spring mounted on the base, at least a portion of the upper surface of the pressure plate being exposed to allow the application of an external force to the pressure plate in opposition to the spring means, means for locating the lower end of a leg of a bed in overlying relationship to said pressure plate, first and second contact means mounted inside the housing and adapted for actuation by movement of the pressure plate whereby the first and second contact means are brought into engagement at a selected height of the pressure plate above the base, and means to adjust the height of the pressure plate at which the contact means are brought into engagement.

4,263,587

LIQUID LEVEL CONTROL SYSTEM

Robert S. John, Deerfield, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

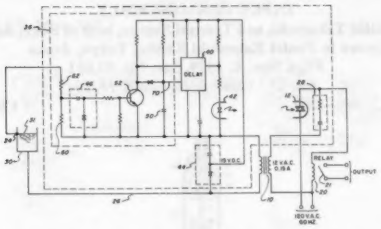
Filed Apr. 9, 1979, Ser. No. 28,388

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—620 **9 Claims**

1. A system for controlling the level of liquid within a container having an electrode closely adjacent a predetermined level of liquid, said electrode adapted to maintain a closed electrical path through the liquid as long as liquid is at least at said level, a source of alternating current, a relay means and a switch means serially disposed across said alternating current source, means for coupling said closed electrical path to said source to power said path with continuous low voltage alternating current, means for operating said switch means in re-

sponse to an open circuit condition in said path indicative of liquid level below said electrode, the condition continuing uninterruptedly for a predetermined time period, said operating means comprising a time delay circuit having a predetermined cycle duration, means for resetting said time delay



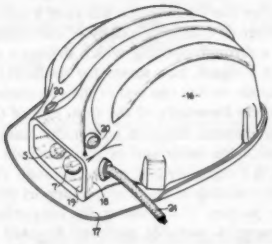
means at intervals less than the duration of said time delay circuit in response to the continued flow of current in said electrical path, said time delay means responsive to an open circuit condition continuing in said path for more than said predetermined duration for causing the operation of said switch means to energize said relay.

4,263,588

HELMET-CARRIED APPARATUS FOR DETECTING AND SIGNALLING THE PRESENCE OF A DANGEROUS GAS IN AN ATMOSPHERE

Alain L. Gautier, Arras, France, assignor to Oldham France S.A., France

Filed Jul. 25, 1979, Ser. No. 60,332
Int. Cl.[3] G08B *17/10*; F21L *15/14*
U.S. Cl. 340—632 **6 Claims**



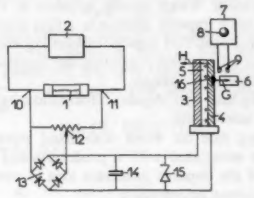
1. A structure comprising a helmet, an illuminating lamp including an electric bulb for casting a continuous beam of light in front of the user of the helmet, a housing enclosing said illuminating lamp and carried by the helmet, an electric power supply separate from the housing and helmet and intended and adapted to be carried by a part of the body of the user of the helmet other than the head of the user, connecting means including a two-wire cable connecting the supply to the bulb of the illuminating lamp, and an electric apparatus for detecting and signalling the presence of a dangerous gas in an atmosphere in the environment of the helmet, said apparatus comprising an electric circuit including means for detecting when the content of said gas in the atmosphere exceeds a predetermined threshold value and electric signalling means connected to be responsive to the detecting means, said apparatus being entirely enclosed in said housing, said circuit being connected to said supply through said two-wire cable, and aperture means in said housing for putting said detecting means in communication with said atmosphere.

4,263,589

DEVICES FOR DETECTING THE RUPTURE OF AN ELECTRICAL CIRCUIT ELEMENT

Jacques Lewiner, 5, rue Bory d'Arnex, 92210 Saint-Cloud; Gerard Dreyfus, Rue du Viaduc, Villebon sur Yvette, 91120 Palaiseau, and Didier Perino, 10, rue de Bellevue, 92150 Suresnes, all of France

Filed Jul. 19, 1979, Ser. No. 59,105
Claims priority, application France, Jul. 25, 1978, 78 22015
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—638 **15 Claims**



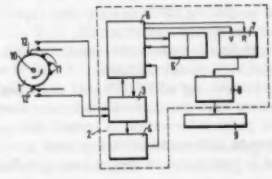
1. Device for detecting the rupture of an electrical circuit element of low resistance, said device comprising means for forming a DC voltage U of which the amplitude varies in the same direction as that developed at each moment at the terminals of the element to be monitored and means for exploiting for signaling purposes or the like the overshoot of a given threshold U_o by this voltage U, comprising two electrodes forming a capacitor, of which one is movable with respect to the other between a monitoring position and a warning position, an electret arranged between these two electrodes, whose charge produces a field exerting on said electrodes and electrostatic force H tending to bring them mutually together toward the monitoring position, means for applying between the two electrodes the voltage U in a direction such that the field which results therefrom is opposed to that due to the electret and hence tends to reduce the force H, and means with scarcely reversible action for urging constantly the movable electrode in reverse direction to the force H, the force of these latter means and the charge of the electret being selected so that the overshoots of the threshold U_o by the voltage U cause swings of the movable electrode from its monitoring position to its warning position, and the exploiting means being arranged so as to be sensitive to said swings.

4,263,590

METHOD AND ARRANGEMENT FOR THE GENERATING AND PROCESSING OF ELECTRICAL IMPULSES

Werner Arnold, Nuremberg, and Josef Neubauer, Grossschwarzenlohe, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,540
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828285
Int. Cl.[3] G01D *5/34*
U.S. Cl. 340—672 **7 Claims**



1. In a method for the generating and processing of electrical

impulses for the setting and correcting of an electronic digital display through a pulse generator generating at least two timewise displaced but still overlapping impulse trains by the rotation of an impulse transmitter against an impulse collector, the frequency of the impulses being dependent upon the rotational speed of the impulse transmitter relative to the impulse collector and the opposite phase from the direction of rotation of the impulse transmitter relative to the impulse collector, the improvement comprising of the following sequentially timed steps:

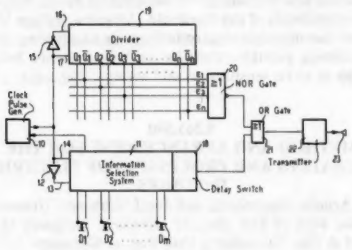
(a) introducing said impulse trains into a microprocessor;
(b) storing digital impulse informations contained in said microprocessor which newly appears at the generator output at each impulse change in a first memory storage.
(c) introducing a further digital impulse information present at the generator output preceding the impulse change into a second memory storage;
(d) combining said two impulse informations into a bit word having at least 4-bits;
(e) comparing said bit word with fixed stored bit words which are associated with a predetermined direction of rotation of the impulse generator axis to obtain forward-rearward count information;
(f) introducing the forward-rearward count information obtained through the comparison into a counter;
(g) decoding the count condition for an electronic digital display,
(h) and transferring the last impulse information present at the generator output so as to be combinable with newly storaged information into a bit word with at least 4-bits.

4,263,591

ELECTRIC TRANSMISSION SYSTEM

Hartmut Kemmesies, Puchheim-Bhf., Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,004
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2809775
Int. Cl.[3] H04G *9/00*
U.S. Cl. 340—695 **4 Claims**



1. An electronic data transmission system for transmission of pulse coded information having a transmitter means and a receiver means, said system comprising:

a plurality of manually actuatable command input means;
a pulse generator actuated by any of said command input means for producing information pulses representing commands according to selected inputs;
a means for producing a pre-signal pulse simultaneously with actuation of any input command;
a means for combining said pre-signal pulse and said information pulses such that a pre-signal pulse associated with respective pulse information is transmitted prior to said information to said receiver means; and
an amplifier in said receiver means having a fixed response time,

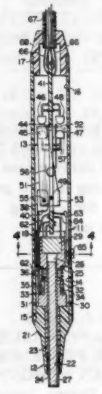
whereby said amplifier is activated by said pre-signal pulse so that said response time has elapsed prior to introduction into said amplifier of pulse information associated with said pre-signal.

4,263,592

INPUT PEN ASSEMBLY

Hiromichi Takahashi, and Tadaaki Sugino, both of Soka, Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1979, Ser. No. 92,051
Int. Cl.[3] G06F *3/14;* G06K *15/20*
U.S. Cl. 340—707 **7 Claims**

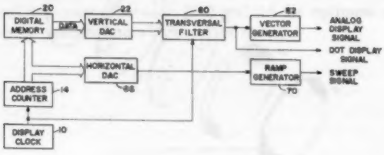


1. An input pen assembly for selective cooperation with the screen of a cathode ray tube of a CRT display and the tablet of a tablet input device; comprising a tubular casing having an opening formed in its front end, a rod-shaped electrode slidably disposed in the opening for deriving a signal from the tablet, the electrode extending axially of the casing and being formed with a through-opening which defines a transmission path for a CRT signal, bias means for resiliently urging the detector electrode so that one end of the rod-shaped electrode normally projects forwardly of the front end of the casing, a light acceptor element disposed within the casing in spaced relationship with the other end of the electrode in order to receive the CRT signal which passes through the through-opening of the rod-shaped electrode, a support plate disposed within a rear portion of the casing for supporting the light acceptor element, a movable member disposed within the casing and movable with the rod-shaped electrode between three positions including a first position corresponding to an initial position of the electrode which is assumed when no pressure is applied to the electrode to cause it to retract within the casing, a second position corresponding to a position of the electrode which is assumed when it is retracted under a given pressure, and a third position corresponding to a position of the electrode which is assumed when it is further retracted under an increased pressure applied thereto, means for operatively connecting the rod-shaped electrode with the movable member, a first and a second position detector for detecting the position of the movable member, the position detectors being associated with selected two of the first to the third position, and a control circuit responsive to signals from the first and the second position detector for determining the position of the movable member, the control circuit activating either one of the CRT display and the tablet input device whenever the movable member assumes said second position and activating the other of the CRT device and the tablet input device whenever the movable member assumes the third position.

4,263,593
DISPLAY INTERPOLATOR EMPLOYING A TRANSVERSAL FILTER FOR A DIGITAL OSCILLOSCOPE

Thomas P. Dagostino, Beaverton; Bruce E. Miller, Portland, and Luis J. Navarro, Beaverton, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 20, 1979, Ser. No. 68,111
Int. Cl.³ G06F 3/14
U.S. Cl. 340—728 **4 Claims**



1. A waveform display system for a digital oscilloscope comprising:

a waveform memory containing digital data representative of amplitude values sampled from a waveform;

means for clocking said digital data out of said memory in a predetermined sequence;

means for converting said digital data to analog data representative of the amplitude of actual waveform samples;

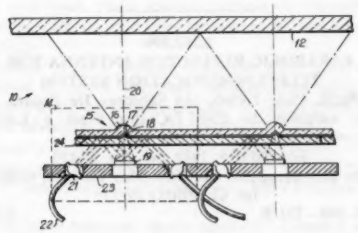
transversal filter means for interpolating between respective adjacent actual analog data and producing interpolated analog data; and

means for multiplexing said actual data and said interpolated data to provide a sequence of actual data with interpolated data inserted therebetween for display.

4,263,594
ELECTRO-OPTICAL DISPLAY DESIGN

Carmine Masucci, Eastchester, N.Y., assignor to Izon Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 916,740, Jun. 19, 1978. This application Sep. 6, 1979, Ser. No. 72,930
Int. Cl.³ G08B 5/36
U.S. Cl. 340—795 **7 Claims**

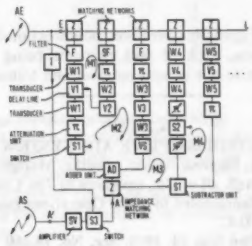


1. In an electro-optical display device having an assembly of individual electrically addressable display elements each having a reflection display surface, said elements arrayed in a plurality of rows and columns, a corresponding array of lenses, each of said display elements aligned with and on the optical axis of a respective one of said lenses with each said reflective display surface facing each said lens, and a screen for receiving images projected along said optical axes, said elements displaying said images in accordance with illumination reflected therefrom, the improvement comprising means for introducing illumination into said assembly from the non-reflective side of such display elements, and illuminating direction means outside each said optical axis for reflecting said illumination onto the reflective display surfaces of each respective display element.

4,263,595
APPARATUS FOR IDENTIFYING OBJECTS AND PERSONS

Klaus Vogel, Gelting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 15, 1979, Ser. No. 39,121
Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821299
Int. Cl.³ G01S 13/80
U.S. Cl. 343—6.5 SS **23 Claims**



1. In an identification system having an information carrier secured to an object to be identified and a read unit connected with the latter via electromagnetic waves, the information carrier comprising an antenna system, a plurality of passive elements connected in a plurality of branch circuits, at least the inputs of said branch circuits being connected in common, and matching circuit, connected between said common connection and said antenna system, said passive elements comprising delay elements having different defined delay times, transducers connected with said delay elements with defined frequencies and bandwith for driving said delay elements, and attenuation elements having defined attenuation characteristics, and a common carrier member for carrying said passive elements.

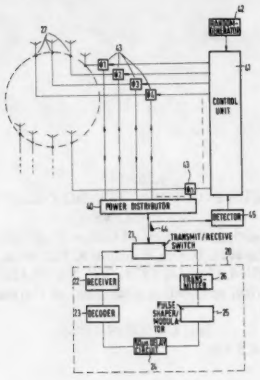
4,263,596
REFERENCE STATION FOR A DISTANCE-MEASURING SYSTEM

Manfred Böhm, Stuttgart, and Günter Höfgen, Kornwestheim, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 813,923, Jul. 8, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 107,001
Int. Cl.³ G01S 1/44
U.S. Cl. 343—106 R **14 Claims**

1. A reference station for distance-measuring systems of the type that includes an antenna for receiving an interrogation signal from an aircraft, a receiver for said signal and a transmitter for providing a reply signal through said antenna so that the

distance between aircrafts and said reference station can be measured, comprising:



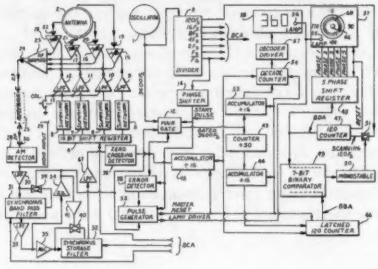
a plurality of spatially distributed nondirectional elements on said antenna, each of said elements being adapted for connection to one of said receiver and transmitter.

4,263,597

NONDISRUPTIVE ADF SYSTEM

Wm. F. Bentley, Smyrna; Arthur Luedtke, Marietta, and James E. Scott, Austell, all of Ga., assignors to The United States of America as Represented by Field Operations Bureau of FCC, Washington, D.C.

Filed Sep. 24, 1979, Ser. No. 78,360
Int. Cl.[3] G01S *5/04*
U.S. Cl. 343—121 **17 Claims**



1. An automatic direction finder system for instantaneously determining the direction of the location of a radio frequency source, with respect to the receiving location comprising:

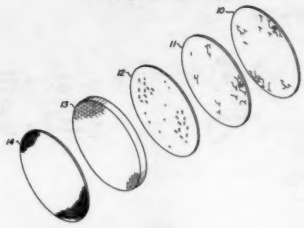
a regular polyangular directional antenna array which has three or more antennas equally spaced in azimuth with the diameter of the array not less than three-eights wave length at the highest operating frequency to receive the radio frequency signal in uniform phase relationship, each directional pattern being of identical cardioid shape and of equal value; a controlling means for synchronizing the system; a driver means creating the sine wave driving voltage to modulate the RF from the antenna; a combiner means and receiver means which process the RF signal and has an output for a detector means; processing means to filter the detector output then store and integrate the bearing to enchance the accuracy; error detecting means and display means to display the bearing information; bearing status indicating means to display the current state of the indicated bearing.

4,263,598

DUAL POLARIZED IMAGE ANTENNA

Ernest C. Bellee, Scottsdale; Raymond G. Immell, Mesa, and Bill H. Sasser, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 22, 1978, Ser. No. 962,815
Int. Cl.[3] H01Q *13/10, 15/00*
U.S. Cl. 343—700 MS **9 Claims**



1. A dual polarized image antenna array comprising:

(a) A first plurality of radiating means for radiating and receiving electromagnetic energy, each radiating means of said first plurality being oriented with the polarizations thereof parallel;

(b) a second plurality of radiating means spaced from said first plurality of radiating means for radiating and receiving electromagnetic energy, each radiating means of said second plurality being oriented with the polarization thereof parallel and perpendicular to the polarization of said first plurality of radiating means and each of said first and second pluralities of radiating means operating at approximately the same frequency;

(c) reflecting means forming a plane for totally reflecting electromagnetic energy radiated by said radiating means;

(d) partially transmitting and reflecting means mounted in spaced relation and substantially parallel to the plane formed by said reflecting means for partially reflecting and transmitting the electromagnetic energy from said radiating means; and

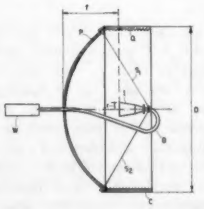
(e) feed means for supplying energy of the correct phase to said radiating means to be transmitted thereby and for providing an output for energy received by said radiating means.

4,263,599

PARABOLIC REFLECTOR ANTENNA FOR TELECOMMUNICATION SYSTEM

Paolo Bielli, Cirie'-Torino, and Salvatore De Padova, Turin, Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed May 9, 1979, Ser. No. 37,470
Claims priority, application Italy, May 11, 1978, 68089 A/78
Int. Cl.[3] H01Q *19/13*
U.S. Cl. 343—781 R **4 Claims**



1. In an antenna for a telecommunication system using in-

coming and outgoing waves which have mutually orthogonal planes of polarization and lie in a common band of operating frequencies with a central wavelength λ_o, comprising a parabolic reflector with a focal distance f and a diameter D, a feed with an aperture of radius r confronting said reflector, and wave-transmitting means connecting said feed to a source of and a receiver for waves in said band polarized in the TE_{11} mode,

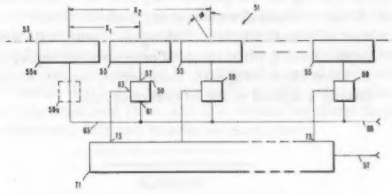
the improvement wherein the ratio $R=f/D$ of said reflector ranges between 0.46 and 0.5 while the ratio $\alpha=r/\lambda_o$ of said feed ranges between 0.52 and 0.6 for optimum efficiency and minimum cross-coupling.

4,263,600

WIDE-BAND, PHASE SCANNED ANTENNA

Frederick C. Williams, and Clarence A. Greene, both of Topanga Canyon, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 10, 1979, Ser. No. 101,593
Int. Cl.³ H01Q *3/26*
U.S. Cl. 343—854 **3 Claims**



1. A wide-band, phase scanned antenna for transmitting a chirped pulse RF signal at a desired scan angle from broadside, comprising:

a plurality of phase scanned sub-arrays, each being dimensioned to exhibit essentially no time delay error thereacross at the maximum scan angle of said antenna, one of said sub-arrays being a reference sub-array;

a plurality of time variable phase shifters, each having an output port coupled to a different one of said sub-arrays, and each having a signal input port and a command input port;

RF signal distribution circuit means for coupling a chirp pulsed RF signal to said signal phase shifters and to said reference sub-array; and

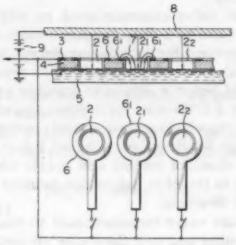
pulse command means coupled to said command input ports of said phase shifters for providing to individual ones of said phase shifters an individual phase control command signal, the phase generated by each individual one of said phase shifters in response to said command signal being initially zero and linearly increasing for the duration of said chirped pulse RF signal and being proportional to the product of the sine of a desired antenna scan angle times the distance between the centers of a sub-array associated with each individual one of said phase shifters and said reference sub-array, the constant of proportionality being the frequency slope of said chirped pulse RF signal divided by the speed of light.

4,263,601

IMAGE FORMING PROCESS

Yukuo Nishimura, Sagamihara; Masahiro Haruta, Funabashi; Yasushi Takatori, Machida, and Katsuhiko Nishide, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1978, Ser. No. 945,533
Claims priority, application Japan, Oct. 1, 1977, 52-118485; Oct. 1, 1977, 52-118486; Oct. 1, 1977, 52-118487; Oct. 1, 1977, 52-118488; Jan. 18, 1978, 53-3815; Feb. 13, 1978, 53-15174
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—1.1 **7 Claims**



1. An image forming process comprising:

providing a screen member having plural through holes and provided with control electrodes in the vicinity of the respective through holes;

providing a counter electrode opposite said screen member;

maintaining the screen member in contact with conductive liquid ink;

applying a predetermined voltage between the liquid ink and the counter electrode; and

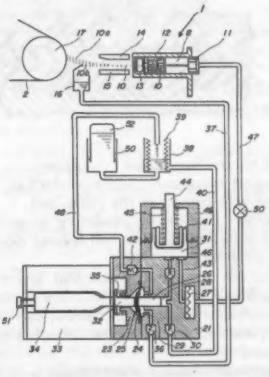
applying a voltage to the control electrodes in accordance with information signals to introduce the conductive liquid selectively into said holes thereby forming an image on said screen member.

4,263,602

CONSTANT FLOW RATE LIQUID SUPPLY PUMP

Masafumi Matsumoto, and Matahira Kotani, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1979, Ser. No. 97,389
Int. Cl.³ G01D *15/18*; G01F *11/30*; F04B *23/00, 41/00*
U.S. Cl. 346—140 R **7 Claims**



1. An ink liquid supply system for an ink jet system printer, said ink jet system printer comprising a nozzle for emitting an ink liquid supplied from said ink liquid supply system and a beam gutter for collecting waste ink dropets emitted from said

nozzle and for recovering the ink liquid toward said ink liquid supply system, said ink liquid supply system comprising:

an ink liquid reservoir for containing the ink liquid therein; and

a constant flow rate pump comprising:

a cylinder block;

a piston disposed in said cylinder block;

a first pressure chamber defined by said cylinder block and one end of said piston;

a resilient member secured to the other end of said piston;

a second pressure chamber defined by said cylinder block, said piston and said resilient member;

drive means for reciprocating said piston within said cylinder block;

a first inlet valve communicated to said first pressure chamber and to a first conduit connected to said ink liquid reservoir for introducing the ink liquid from said ink liquid reservoir into said first pressure chamber when said piston is driven to travel in a predetermined direction; a first outlet valve communicated to said first pressure chamber and to a second conduit connected to said nozzle for developing the ink liquid from said first pressure chamber toward said nozzle when said piston is driven to travel in a direction counter to said predetermined direction;

a second inlet valve communicated to said second pressure chamber and to a third conduit connected to said beam gutter for introducing the waste ink liquid from said beam gutter into said second pressure chamber when said piston is driven to travel in said predetermined direction; and

a second outlet valve communicated to said second pressure chamber and to a fourth conduit connected to said ink liquid reservoir for developing the waste ink liquid from said second pressure chamber toward said ink liquid reservoir when said piston is driven to travel in said direction counter to said predetermined direction.

4,263,603

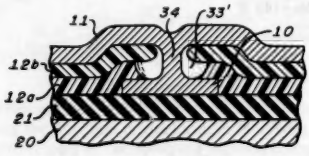
SUBMINIATURE BORE AND CONDUCTOR FORMATION

Don W. Jillie, Jr., Arlington, Mass., assignor to Sperry Corporation, New York, N.Y.

Division of Ser. No. 882,826, Mar. 2, 1978, Pat. No. 4,176,029. This application Jun. 6, 1979, Ser. No. 46,396

Int. Cl.³ H01L *39/22*

U.S. Cl. 357—5 **7 Claims**



1. A current controlling device comprising:

first and second electrically super-conductive layers, one superposed with respect to the other, and

first and second electrically insulative permanent layers interposed between said first and second electrically super-conductive layers,

said electrically insulative permanent layers having at least one hole therethrough with a first electrical linking super-conductor disposed in current carrying relation between said first and second electrically super-conductive layers,

said first electrically insulative permanent layer being composed of a material resistant to etching by a first etching process but susceptible of etching by a second etching process to form a first portion of said hole,

said second electrically insulative permanent layer being composed of a material susceptible of etching by said first etching process to form a second portion of said hole but resistant to said second etching process, and

said first electrically super-conducting layer and said first electrical linking super-conductor being formed integrally of the same material.

4,263,604

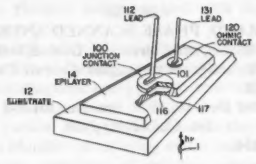
GRADED GAP SEMICONDUCTOR DETECTOR

James D. Jensen, Highland, and Richard B. Schoolar, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 864,417, Dec. 27, 1977, Pat. No. 4,227,948. This application Apr. 25, 1980, Ser. No. 143,694

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **30 Claims**



1. A narrowband detector, comprised of:

a layer of a lead cadmium chalcogenide alloy with a detector region having a first range of compositions separated from incident electromagnetic radiation by an adjoining region having a second range of compositions.

4,263,605

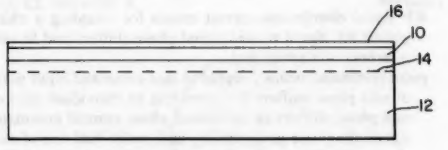
ION-IMPLANTED, IMPROVED OHMIC CONTACTS FOR GaAs SEMICONDUCTOR DEVICES

Aristos Christou, Springfield, and John E. Davey, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 4, 1979, Ser. No. 1,031

Int. Cl.³ H01L *23/48, 29/40, 29/62*

U.S. Cl. 357—65 **6 Claims**



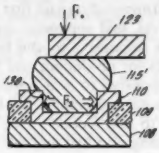
1. In a GaAs semiconductor device having a GaAs base and a passivation layer of refractory material upon a surface thereof, the improvement comprising:

an ion-doped layer within said GaAs base formed by implanting ions in said base so that the peak concentration of ions lies no more than 100 A below the interface of the GaAs and the refractory layer.

4,263,606
LOW STRESS SEMICONDUCTOR DEVICE LEAD CONNECTION

Masaharu Yorikane, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Japan

Filed Jul. 17, 1978, Ser. No. 925,324
Claims priority, application Japan, Jul. 18, 1977, 52/86524
Int. Cl.[3] H01L 23/48, 29/46, 29/54
U.S. Cl. 357—71 5 Claims

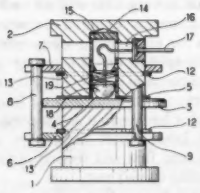


1. A semiconductor device comprising: a semiconductor substrate; a first insulating film covering at least a portion of said substrate; a wiring path formed on said first insulating film; a second insulating film covering said wiring path; an aperture being provided in said second insulating film, exposing at least a portion of said wiring path; a first protective metal layer entirely covering said portion of said wiring path exposed through said aperture, to form a recess therein; a bump electrode terminal made of a metal provided in said recess on said first metal layer, said bump electrode terminal being in contact with said first metal layer over an area smaller than the area of said recess; said terminal further having a bottom surface, a top surface and a side surface; said bump electrode terminal protruding from said recess beyond said first protective metal layer; and an external lead plate having an end portion which has been connected to said top surface of said bump electrode terminal by means of mechanical pressure in such a manner that said side surface of said bump electrode terminal has been deformed laterally toward said first protective metal layer said terminal further having a bottom surface, said side surface being entirely separated from said first protective metal layer except where said side and bottom surfaces meet.

4,263,607
SNAP FIT SUPPORT HOUSING FOR A SEMICONDUCTOR POWER WAFER

Bernard Legrand, Villiers St Frederic, and Michel Masselin, Velizy Villacoublay, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Mar. 6, 1979, Ser. No. 18,199
Int. Cl.[3] H01L 23/42, 23/44, 23/46
U.S. Cl. 357—79 2 Claims

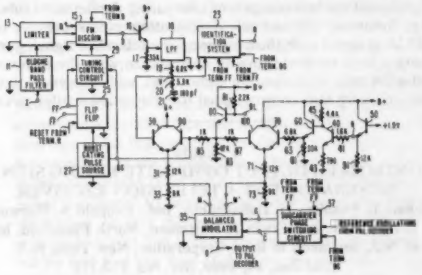


1. A snap fit support housing for a semiconductor power wafer capable of immersion in a fluorinated hydrocarbon, said support including two cylindrical metal blocks which act as a cathode and an anode, respectively, said semiconductor wafer having a diameter greater than the diameter of the cylinders of said blocks, being integral therebetween, and including, on the cathode side, a metal washer with a diameter substantially equal to that of said cylinders, the improvement wherein two insulating plates which have substantially polygonal outlines enclose respectively the cathode block and the anode block, each block being provided with a transversal groove and with circlips, disposed inside said plates and in contact therewith, said plates being locked to each other by three insulating pins which are tangential to said wafer and are snap-fitted into three notches disposed at 120° to one another on said polygonal outline.

4,263,608
BURST INSERTION APPARATUS FOR SECAM-PAL TRANSCODER

Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,655
Claims priority, application United Kingdom, Jan. 9, 1979, 802/79
Int. Cl.[3] H04N 9/38
U.S. Cl. 358—11 3 Claims



1. Apparatus for converting an image-representative chrominance component of received signals which are encoded in SECAM fashion to a chrominance signal suitable for application to a PAL decoder, said apparatus comprising:

frequency discriminator means, responsive to said chrominance information encoded in SECAM fashion, for sequentially developing respective first and second color-difference signals superimposed upon a common DC component;

a source of oscillations of a frequency corresponding to the standard PAL color subcarrier frequency;

a balanced modulator having a pair of carrier wave input terminals, first and second modulating signal input terminals, and an output terminal;

means for applying oscillations from said source in push-pull to said carrier wave input terminals;

means for applying the output of said frequency discriminator means to said first modulating signal terminal;

means for applying a first DC potential matching said DC component to said second modulating signal terminal;

means, operative during periodic intervals of said received signals which are free of said image-representative chrominance component, for applying a second DC potential in common to said first and second modulating terminals, while disabling said discriminator output applying means and said first DC potential applying means; and

means, operative during only selected segments of said periodic intervals, for applying a burst gating pulse to only one of said modulating signal terminals.

4,263,609
AUTOMATIC DEVIATION LIMIT CONTROL CIRCUIT FOR SECAM ENCODERS

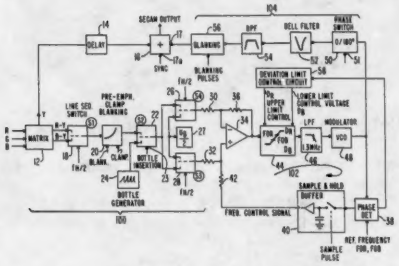
Felix Aschwanden, Thalwil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,222

Claims priority, application United Kingdom, Apr. 5, 1979, 12023/79

Int. Cl.³ H04N *9/40*

U.S. Cl. 358—14 **9 Claims**



1. A method for automatic deviation control of a SECAM signal, said method comprising comparing the deviated subcarrier frequency of vertical identification pulses present in a SECAM signal with the frequency of a reference signal, generating a limit control signal in accordance with the difference between said identification pulses and said reference signal, and applying said control signal to a deviation limiter circuit.

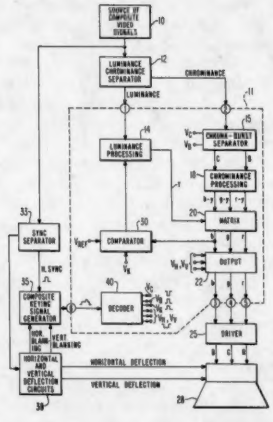
4,263,610
CONTROLLED OUTPUT COMPOSITE KEYING SIGNAL GENERATOR FOR A TELEVISION RECEIVER

Robert L. Shanley, II, Indianapolis, Ind.; Leopold A. Harwood, Bridgewater, and Erwin J. Wittmann, North Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 18, 1980, Ser. No. 113,371

Int. Cl.³ H04N *9/46*

U.S. Cl. 358—20 **10 Claims**



1. In a color television reciever for processing a composite color television signal containing image information occurring during periodic image intervals and synchronizing information occurring during periodic image blanking intervals, said synchronizing information including: a vertical synchronizing component occurring during vertical blanking intervals, a horizontal synchronizing component occurring during horizontal blanking intervals, and a color burst component occurring during a burst interval within horizontal blanking intervals; said receiver including means for providing a horizontal reference pulse representative of said horizontal synchronizing component; means for deriving horizontal and vertical blanking signals from said synchronizing information; keyed signal processing circuits; and apparatus including means for generating at an output a composite keying signal comprising a first pulse substantially coincident with said blanking intervals and a second pulse superimposed on said first pulse and encompassing said burst interval, said apparatus comprising:

translating means responsive to said horizontal and vertical blanking signals for producing said first pulse;

keyed means responsive to said horizontal reference pulse for producing a pulse encompassing said burst interval and corresponding to said second pulse;

means for combining said first and second pulses to produce said composite keying signal at said output of said composite keying signal generator means;

means for coupling said composite keying signal to said keyed signal processing circuits; and

control means coupled to said composite keying signal generator means, said control means exhibiting one conductive condition during blanking intervals of said television signal, and exhibiting another conductive condition during image intervals for inhibiting the output of said composite keying signal generator means during said image intervals.

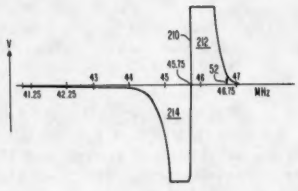
4,263,611
TELEVISION SIGNAL PROCESSING SYSTEM

Walter G. Gibson, Princeton; Frank C. Liu, Kendall Park, both of N.J., and Max W. Muterspaugh, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,903

Int. Cl.³ H04N *9/50, 5/50*

U.S. Cl. 358—23 **7 Claims**



1. In a television receiver, apparatus for processing an intermediate frequency television signal which occupies a passband including a picture carrier frequency and a sound carrier frequency comprising:

a phase detector having first and second inputs, third and fourth inputs, means coupled between said third and fourth inputs for imparting a frequency-dependent phase shift to signals applied thereto, and an output for producing a tuning correction signal indicative of the deviation of said picture carrier from its desired frequency; and

a product detector having first and second inputs coupled to receive said intermediate frequency signal, third and fourth inputs, and first and second outputs for producing a detected video signal; and

a reference circuit, having first and second inputs coupled to receive said intermediate frequency television signal, and first and second output terminals respectively coupled to said first and second inputs of said phase detector, to said third and fourth inputs of said phase detector, and to said third and fourth inputs of said product detector, and including selectivity means for providing a characteristic response at said output terminals which

(1) substantially balances first and second opposite polarity

response curves of said phase detector about the desired frequency of said picture carrier, (2) reduces the contribution to said tuning correction signal provided by signals at said sound carrier frequency, (3) substantially balances the amplitude versus frequency response at said first and second terminals about said desired picture carrier frequency, and (4) provides substantial attenuation at that picture signal sideband frequency which, upon detection, results in a video signal corresponding to the intercarrier sound second subharmonic frequency,

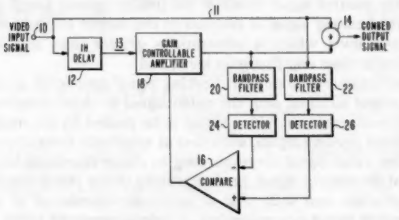
wherein said selectivity means comprises a single, double-tuned circuit which provides a response pole at said desired picture carrier frequency, and a response zero at a given frequency which is between said sound carrier frequency and a frequency which is equidistant between said sound and picture carrier frequencies.

4,263,612

COMB FILTER EQUALIZATION CIRCUIT

Walter G. Gibson, Princeton, N.J., and Roger D. Thompson, Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 1, 1979, Ser. No. 62,787
Int. Cl.³ H04N 9/535
U.S. Cl. 358—31 **17 Claims**



1. A comb filter for separating two frequency interleaved signal components of a television signal comprising:

a source of video input signals, including two frequency interleaved signal components;

means having two inputs for combining signals at said inputs to develop a combed output signal;

first and second signal paths coupled from said input signal source to the inputs of said combining means;

means, included in one of said signal paths, for delaying the signals in said one path by the scanning time of one horizontal television line;

a first amplitude detector, having an input coupled to one of the inputs of said combining means, and an output and exhibiting a time constant which is long as compared to a television line scanning interval;

a second amplitude detector, having an input coupled to the other input of said combining means, and an output and exhibiting a time constant which is long as compared to a television line scanning interval;

means, having first and second inputs coupled to the outputs of said amplitude detectors, and an output for developing a control signal proportional to the long-term variation in signal amplitudes detected by said amplitude detectors; and

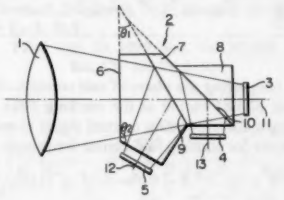
means, included in one of said signal paths, and responsive to said control signal, for controlling the signal level on said path.

4,263,613

TELEVISION CAMERA

Mitsuhiro Tokuhara, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,607
Claims priority, application Japan, Jul. 6, 1978, 53-82278
Int. Cl.³ H04N 9/04
U.S. Cl. 358—55 **3 Claims**



1. A television camera, comprising:

an objective lens;

a first solid-state image pick-up element provided on the optical axis of said objective lens;

a color separation optical system positioned between said objective lens and said first solid-state image pick-up element and comprising three prisms, wherein a first prism counted from the objective lens side comprises an entrance face, a junction face and a first exit face, a second prism comprises a first prism junction face, a third prism junction face and a second exit face, and a third prism comprises a junction face and a third exit face, said junction face of the first prism being adhered to said first prism junction face of the second prism through a first dichroic mirror while said third prism junction face of the second prism is adhered to said junction face of the third prism through a second dichroic mirror, whereby the light reflected by said first dichroic mirror is directly transmitted by said first exit face of the first prism while the light reflected by said second dichroic mirror is directly transmitted by said second exit face of the second prism, and the light transmitted by said second dichroic mirror is directly transmitted by said third exit face of the third prism, and said first and second dichroic mirrors are slanted in a same direction with respect to the optical axis of said objective lens;

a second solid-state image pick-up element provided in facing relationship to said second exit face of the color separation optical system; and

a third solid-state image pick-up element provided in facing relationship to said third exit face of the color separation optical system.

4,263,614

PHASE TRACKING LOOP CIRCUIT

Kiyonori Tominaga, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 102,973
Claims priority, application Japan, Dec. 22, 1978, 53-163811
Int. Cl.³ H04N 9/24; H03D 3/22
U.S. Cl. 358—69 **14 Claims**

1. A phase-tracking loop circuit comprising:

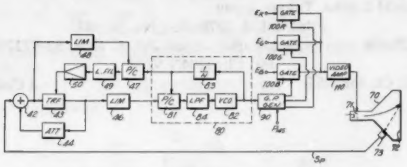
adder means having inputs for receiving respective signals and providing a combined signal therefrom;

means for applying an input signal of varying frequency to one of said inputs of the adder means;

tracking filter means receiving said combined signal for passing a frequency band thereof having a center frequency which is shiftable in response to a control signal applied to said tracking filter means;

attenuator means for applying an attenuated version of the

output of said tracking filter means to another of said inputs of the adder means; and



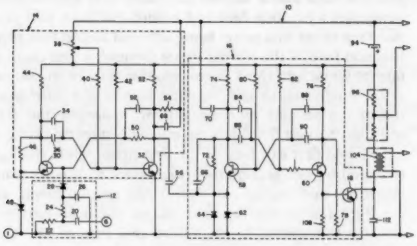
means for comparing the phase of said combined signal with the phase of said output of the tracking filter means and providing a corresponding control signal to said tracking filter means for shifting said center frequency.

4,263,615

HORIZONTAL DRIVE CIRCUIT FOR VIDEO DISPLAY

Richard J. Steinmetz, Elk Grove Village, and Gregory J. Beaumont, Arlington Heights, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 20, 1979, Ser. No. 77,517
Int. Cl.³ H04N 5/04
U.S. Cl. 358—148 **7 Claims**



1. A system for synchronizing the horizontal sweep signals of a horizontal sweep drive circuit for controlling the scan of an electron beam in a cathode ray tube with input drive signals including horizontal synchronization or drive pulses, said system comprising in combination:

horizontal synchronization pulse processing means for generating a first series of output pulses, said horizontal synchronization pulse processing means responsive to the leading edge of the horizontal synchronization or drive pulses;

variable time delay means for generating a second series of output pulses of variable length, said variable time delay means responsive to said first series of output pulses of said horizontal synchronization pulse processing means; and

fixed time delay means for generating a third series of output pulses of fixed length, said fixed time delay means responsive to the trailing edge of said variable length output pulses and additively coupled to the variable time delay means for producing a series of output drive pulses of fixed time duration and of variable phase with respect to said horizontal synchronization or drive pulses;

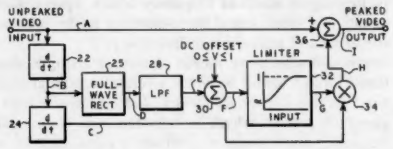
said horizontal sweep drive circuit having an input coupled to said fixed time delay means and responsive to said series of fixed time duration, variable phase output drive pulses for synchronizing the horizontal sweep signals with said horizontal synchronization or drive pulses.

4,263,616

SIGNAL PEAKING METHOD AND APPARATUS

Ronald B. Lee, Skokie, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 3, 1979, Ser. No. 99,373
Int. Cl.³ H04N 5/14
U.S. Cl. 358—166 **21 Claims**



1. A method of peaking the amplitude transitions of an unpeaked video signal having noise components, comprising:

developing from the video signal a peaking signal having magnitude variations related to and occurring in time correlation with amplitude transitions in the video signal;

developing from the video signal a control signal having magnitude variations related to and occurring in time correlation with amplitude transitions in the video signal and with peaking signal;

modulating the peaking signal with the control signal such that so long as the magnitude of the control signal exceeds a predetermined threshold associated with a video signal transition of a preselected value, the peaking signal is caused to be coupled to an output terminal at or above a first gain level and such that so long as the magnitude of the control signal is below the predetermined threshold, the peaking signal is coupled to the output terminal at a gain level which is substantially greater than zero but lower than said first gain level; and

combining the modulated peaking signal appearing at said output terminal with the video signal to cause amplitude transitions in the video signal to be peaked by the modulated peaking signal, such that at amplitude transitions in the video signal corresponding to above-threshold levels of the control signal, greater peaking of the video signal is effected, and such that at amplitude transitions of the video signal corresponding to below-threshold levels of the control signal, lesser peaking is effected and low level components and noise in the peaking signal are combined with the video signal;

whereby a peaked video signal is produced which is capable of yielding television pictures which have sharply peaked, high level brightness transitions, and yet which are natural looking without excessive noise due to the presence of a limited amount of low level peaking components and noise in the peaking signal.

4,263,617

SYSTEM FOR THE TRANSMISSION OF A COMPOSITE TELEVISION SIGNAL

Henri Chemin; Claude Cluniat, and Bernard Beltzer, all of Paris, France, assignors to L.G.T. Laboratoire General des Telecommunications, Chatou, France

Filed Sep. 18, 1979, Ser. No. 76,776
Claims priority, application France, Sep. 22, 1978, 78 27255
Int. Cl.³ H04N 5/38
U.S. Cl. 358—186 **12 Claims**

1. A system for transmission of a composite television signal comprising:

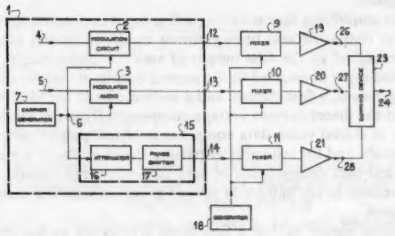
a generating device for delivering two carrier signals modulated respectively by the audio and video-frequency information which constitutes the television signal,

at least one first and one second amplification channel,

and a summing device having at least two inputs coupled respectively to the outputs of the first and second amplifi-

cation channels and an output constituting the output of the transmission system,

the generating device being constituted by a modulation circuit and a processing circuit whose outputs deliver respectively the carrier signal which is amplitude-



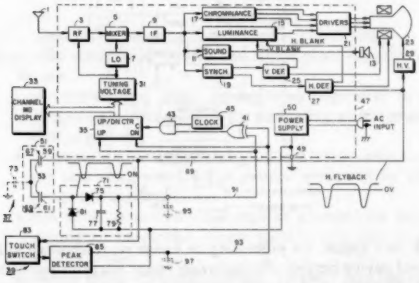
modulated by the video-frequency signals with a reduced video-frequency carrier signal level, and an unmodulated carrier signal, the outputs of the modulation circuit and of the processing circuit being coupled respectively to the inputs of the first and second amplification channels.

4,263,618

TOUCH SWITCH ARRANGEMENT USEFUL IN A TELEVISION RECEIVER

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 22,024
Int. Cl.³ H04N *5/44*
U.S. Cl. 358—188 **6 Claims**



1. User responsive control apparatus for controlling an associated system, comprising:

a source of alternating signals;

control means for controlling a predetermined function of said system in response to a control signal;

touch sensitive means for coupling said alternating signal to said control means, said touch sensitive means including first and second capacitors connected in series and having first, second and common electrodes, said common electrode being accessible to a user, said touch sensitive means attenuating said alternating signal when said common electrode is touched by a user;

first connection means for coupling said source of alternating signal to said first electrodes;

second connection means for coupling said second electrodes to said control means, said second connection means exhibiting stray capacitances;

a diode directly connected in series between said second electrode and said second connection means; and

filter capacitor means coupled in shunt with the junction of said diode and said second connection means;

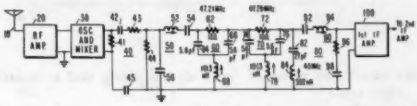
said diode being poled to conduct in response to a predetermined polarity of said alternating signal to charge said filter capacitor means to thereby generate said control signal and also to isolate said touch sensitive means from the capacitance associated with said filter capacitor means and the stray capacitance associated with said second connection means.

4,263,619

DOUBLE TRAPPING OF ADJACENT CHANNEL SOUND

Gerald E. Theriault, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1979, Ser. No. 32,025
Int. Cl.³ H04N *5/60*
U.S. Cl. 358—196 **10 Claims**



1. In a television receiver including means for converting received radio frequency signals to intermediate frequency signals, the output of said converting means including a signal component of a selected television channel at a first intermediate frequency, and a signal component of an adjacent television channel at a second intermediate frequency subject to appearance within a given range of frequencies centered about a nominal frequency location; intermediate frequency signal processing apparatus comprising:

means for amplifying said intermediate frequency signals; and

a network coupled intermediate said converting means and said amplifying means, including, in cascade:

a first trap circuit tuned to a frequency which is within said given range of frequencies and above said nominal frequency location; and

a second trap circuit tuned to a frequency which is within said given range of frequencies and below said nominal frequency location,

wherein mutual coupling between said first and second trap circuits is provided so as to establish an overall response characteristic for said network which exhibits a substantially flat bottom between the frequencies to which said trap circuits are tuned.

4,263,620

PICTURE PICKUP TARGET AND READING DEVICE ASSEMBLY

Pierre Felix, Paris, France, assignor to Thomson-CSF, Paris, France

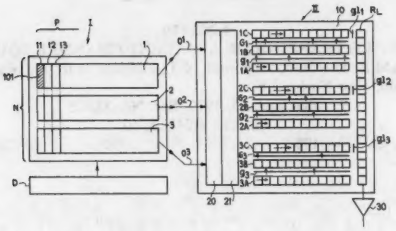
Filed Mar. 21, 1979, Ser. No. 22,686
Claims priority, application France, Mar. 24, 1978, 78 08671
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **12 Claims**

1. An Assembly formed by a picture pickup target and a device for reading the same which target is composed of a matrix of pinpoint detectors, or points of the target placed at the intersection points of N lines and P rectangular columns, exposed to radiation from the image area and supplying and electrical signal under its effect, said device being characterised in that it comprises one input per target line and an output register comprising only one output connected to the input of a reading apparatus and in that it comprises, for each line, arranged between said inputs and said register, means performing the following functions simultaneously for all said lines:

(a) reception in A channels of the signals of the detectors in the line in order of addressing selected, and transfer along these channels in a time t_1 designated as the target line reading time;

(b) transfer in parallel of these signals to storage units B with a recurrence time equal to the line reading time t_1;

(c) transfer in parallel of the signals stored in the B channels into evacuation channels C with the same recurrence time t_1;



(d) transfer in series of these signals along said evacuation channels C;

(e) transfer of these signals to the output register, the time for evacuating all of the signals received by the output register being equal to that taken to read a picture in the reading apparatus.

4,263,621

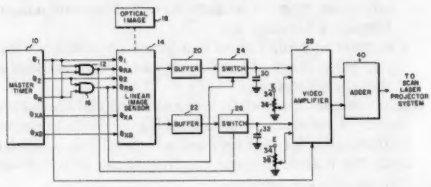
CHARGE COUPLED DEVICE SIGNAL OUTPUT SUMMING CIRCUIT

Herbert Berke, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 21, 1979, Ser. No. 50,946

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **26 Claims**



1. A charge coupled device signal output summing circuit comprising in combination:

timing circuit means having first, second, third, fourth, fifth, and sixth outputs for generating first, second, third, fourth, fifth, and sixth clock signals, each of which has a plurality of uniformly spaced pulses; sensing means having first, second, third, fourth, fifth, and sixth inputs effectively and respectively connected to the first, second, third, fourth, fifth, and sixth outputs of said timing circuit means, a first signal output, a second signal output, and an optical input for producing a pair of output signals, each of which has a plurality of video data components, and each of which is in proportion to the amount of light received from an optical image at the optical input thereof;

switching means having a first input connected to the fourth output of said timing circuit means, a second input connected to the third output of said timing circuit means, a third input connected to the first signal output of said sensing means, a fourth input connected to the second signal output of said sensing means, a first output, and a second output for sampling the plurality of video data components of the first of said pair of output signals in response to the uniformly spaced pulses of said fourth clock signal, for storing therein the plurality of sampled video data components of the first of said pair of output signals, for sampling the plurality of video data components of the second of said pair of output signals in response to the uniformly spaced pulses of said third clock signal, and for storing therein the plurality of sampled video data components of the second of said pair of output signals;

video amplifying means having a first input connected to the first output of said timing circuit means, a second input connected to the first output of said switching means, a third input connected to the second output of said switching means, a first output, and a second output for filtering out the direct current voltage component from the plurality of stored video data components of said pair of output signals, and for sequentially passing the plurality of stored video data components of said pair of output signals in response to the uniformly spaced pulses of said first clock signal;

summing means having a first input connected to the first output of said video amplifying means, a second input connected to the second output of said video amplifying means, and an output for adding the plurality of passed video data components of said pair of output signals so as to provide a video data signal.

4,263,622

AUTOMATIC KINESCOPE BIASING SYSTEM

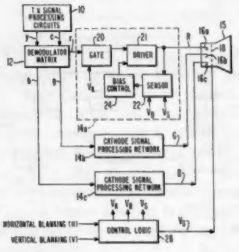
Werner Hinn, Zollikerberg, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,242

Claims priority, application United Kingdom, Jan. 30, 1979, 03212/79

Int. Cl.³ H04N *9/20, 9/535, 5/68*

U.S. Cl. 358—242 **9 Claims**



1. In a system for processing an image representative video signal having periodically recurring image intervals and blanking intervals, said system including an image reproducing kinescope having an electron gun with cathode and grid intensity control electrodes, and means for coupling video signals to said kinescope electron gun; apparatus for automatically controlling the blanking level bias of said kinescope, comprising:

means for providing a reference bias voltage to said cathode electrode via a cathode current conduction path during a measuring interval coincident with a portion of said blanking interval;

means for providing an auxiliary signal to said grid electrode during a portion of said measuring interval with a sense for forward biasing said grid electrode;

voltage responsive sensing means with an input coupled to said cathode current conduction path and an output, for providing an output difference voltage proportional to the difference between current flowing in said cathode current path during said portion of said measuring interval in response to said auxiliary signal, and current flowing in said cathode current path at other times during said measuring interval; and

means responsive to said difference voltage for providing a control signal to said video signal coupling means, for modifying the bias of said kinescope in a direction to

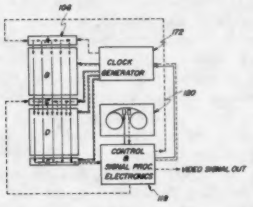
reduce said voltage difference to a minimum level corresponding to a desired kinescope bias condition.

4,263,623

SLOW-FRAME VIDEO CAMERA/RECORDER AND IMAGE-SENSING AND SIGNAL PROCESSING DEVICE FOR USE THEREWITH

Nea-Yea Woo, Rochester, and Evan A. Edwards, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,480
Int. Cl.[3] H04N *5/78, 3/14*
U.S. Cl. 360—10 **3 Claims**



2. A slow-frame video camera/recorder, comprising:

a. a solid state image sensing and signal processing device having:

a two-dimensional image sensing array responsive to an imagewise pattern of light for generating an imagewise charge pattern;

a frame storage array for receiving and temporarily storing said imagewise charge pattern generated by said image sensing array;

a first serial-to-parallel input register arranged for introducing an imagewise charge pattern into said image sensing array;

a second serial-to-parallel register, disposed between said image sensing array and said frame storage array, and arranged for introducing an imagewise charge pattern into said storage array and for transferring an imagewise charge pattern from said sensing array to said storage array; and

a parallel-to-serial output register arranged to read out an imagewise charge pattern from said storage array to produce a video signal;

b. magnetic tape recorder means for recording and playing back a video signal; and

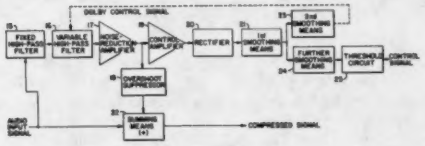
c. control means, operative in a record mode for causing said solid-state image sensing and signal processing device to generate a video signal composed of successive slow-frames occurring at a rate corresponding to a submultiple of a standard field rate and to supply said slow-frame signal to said recorder for for recording, and operative in a playback mode for supplying said recorded slow-frame video signal to said solid-state image sensing and signal processing device and for causing said device to time compress said signal, frame by frame, and to repeat said time compressed frames a number of times to produce a video signal at said standard field rate.

4,263,624

ANALOG RECORDING ON MAGNETIC MEDIA

Kenneth J. Gundry, San Francisco, Calif., assignor to Dolby Laboratories Licensing Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 968,684, Dec. 12, 1978, which is a continuation-in-part of Ser. No. 864,541, Dec. 27, 1977, abandoned. This application Jul. 13, 1979, Ser. No. 57,473
Int. Cl.[3] G11B *5/02, 5/45, 5/47*
U.S. Cl. 360—25 **28 Claims**



1. Apparatus for recording audio signals on a magnetic medium in which the sensitivity of the medium varies in a frequency dependent manner as the amplitude of the record bias signal is varied, comprising

amplifier means receiving said audio signals,

means responsive to said audio signals for generating a record bias signal varying in amplitude in response to at least one predetermined parameter of said audio signals,

means for varying the equalization of said amplifier means as said record bias signal varies, said means for varying the equalization having a frequency dependent response to compensate for said variation in sensitivity, and

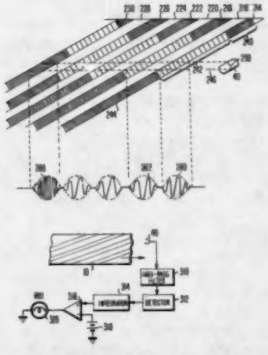
means in recording relationship with said magnetic medium for applying the amplified audio signals and said varying record bias signal to said magnetic medium.

4,263,625

HEADWHEEL SERVO LOCK VERIFICATION WITH STATIONARY HEAD

Henry R. Warren, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,329
Int. Cl.[3] H04N *5/78;* **G11B** *27/36, 27/22*
U.S. Cl. 360—31 **6 Claims**



1. An arrangement for monitoring the synchronization of a headwheel servo loop of a recorder adapted for recording

video signals onto magnetic tape which passes along a path through said recorder, said video signals including recurrent synchronizing signals by which said headwheel is synchronized, comprising:

stationary head means located downstream from said headwheel and contiguous with said path for transducing said video signals, said stationary head means further being located at a transverse position on said path corresponding to a unique position taken by said synchronization signal when said headwheel is correctly synchronized; and

sensing means coupled to said stationary head for responding differentially to that portion of said video signals corresponding to said synchronizing signal and to the remainder of said video signals for generating a control signal indicative of servo loop locking status.

4,263,626

CONTROL SYSTEM FOR A TAPE RECORDER

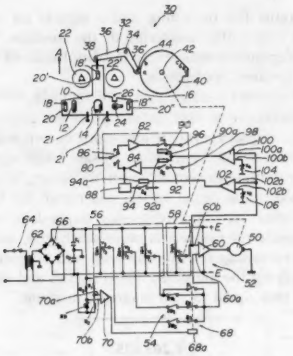
Kozo Kobayashi, Kodaira, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

Filed Sep. 19, 1979, Ser. No. 77,108

Claims priority, application Japan, Sep. 22, 1978, 53-130408[U]; Dec. 13, 1978, 53-172258[U]

Int. Cl.³ G11B *15/04, 15/12*

U.S. Cl. 360—60 **7 Claims**



1. A control system for a tape recorder comprising a recording and reproducing circuit connected to magnetic head means, control means to move said magnetic head means from a stopping mode to an operating mode including at least a recording mode and a reproducing mode, a control electric motor to drive said control means, and mode selecting switches to select either of said stopping and operating modes to operate said control electric motor until said selected mode is reached, characterized by further comprising;

means provided in said recording and reproducing circuit to energize said recording and reproducing circuit when instruction signals are received;

muting reference signal generating means to generate muting reference signals;

variable signal generating means to generate a variable signal varying accordance with movement of said magnetic head means relative to a magnetic tape;

and comparator means at its output connected to said means to energize said recording and reproducing circuit and at its input connected to said muting reference signal generating means and to said variable signal generating means to comparatively operate said muting reference signals and said variable signal to thereby generate said instruction signals during the period after said magnetic head means contacts said magnetic tape and before said magnetic head means reaches the position where said recording and reproducing mode is to be effected.

4,263,627

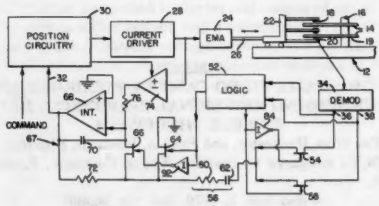
ELECTRONIC TACHOMETER

Andrew M. Rose, Mountain View, Calif., and James J. Touchton, Boulder, Colo., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,247

Int. Cl.³ G11B *21/10, 19/14, 5/54*

U.S. Cl. 360—75 **4 Claims**



1. An electronic tachometer for producing at a circuit point a voltage signal representative of the speed at which a servo head moves transversely of a plurality of parallel magnetic tracks formed on a magnetizable medium, the head coacting with the magnetic tracks to produce a regular discontinuous position signal, said regular discontinuous position signal having a first linear portion that varies in a positive-going sense at a rate representative of servo head speed transversely of the magnetic tracks, a second linear portion that varies in a negative-going sense at a rate representative of servo head speed transversely of the magnetic tracks, and nonlinear portions intermediate said linear portions, said tachometer comprising means for producing an inverted signal that is the inverse of said regular signal, a passive differentiator for differentiating said regular and inverted signals, said differentiator having an input and an output which is the derivative of the input, means for alternately coupling said regular and inverted discontinuous signals to said input so that signals of only one sense are coupled to said differentiator, and switch means connecting the output to the circuit point only at times when said signals are in said linear portions.

4,263,628

MAGNETIC TRANSDUCING TAPE TRANSPORT SYSTEM

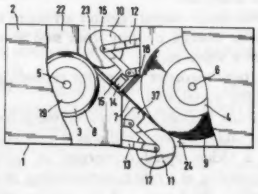
Horst Timm, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jun. 27, 1979, Ser. No. 52,343

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1978, 2831281

Int. Cl.³ G11B *5/48, 15/22, 23/04*

U.S. Cl. 360—96.3 **17 Claims**



1. Tape transducing system comprising

a support frame (**29**);

a take-up winding (**8**) and a pay-out winding (**9**), said windings being located adjacent each other and having centers of rotation fixed with respect to the frame;

drive means (**10, 30**) in engagement with the tape take-up winding (**8**) comprising a drive roller (**10**) in engagement

with the take-up winding (8) and engaging the tape at one side thereof, rotating the take-up winding in a first take-up direction;

retardation means (11) in engagement with the pay-out winding (9) comprising a brake roller (11) in engagement with the pay-out winding (9) and engaging the tape (7) at the side opposite the side at which the drive roller is engaged, and applying a braking or retarding tension on the tape, while permitting rotation of said pay-out winding (9) in a direction opposite to that of the direction of rotation of the take-up winding (8);

support link means (12, 13) movably secured to the support frame (23) and supporting the respective drive roller and brake roller means for mutually parallel and radial movement with respect to the associated winding;

said windings, upon rotation in opposite directions, transporting tape in a path which is diagonal with respect to a tangential line connecting the circumferences of said windings;

a transducer head (14, 15) being located intermediate the windings and on the diagonal portion of the transport path;

and head support means (12, 16, 18) movably supporting the transducer head with substantially perpendicular orientation with respect to the tape, said head support means being coupled to the axis of rotation of the respective roller and moving in parallel therewith as the diameters of the respective winding change in operation, and the tape position in the transport path changes as tape is wound from the pay-out winding unto the take-up winding.

4,263,629

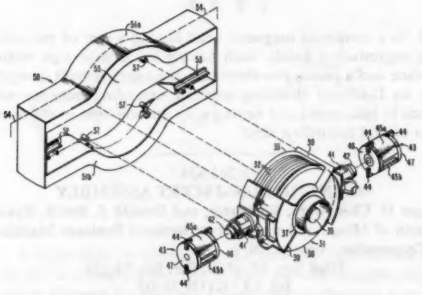
DISK FILE WITH SYMMETRICAL HOLLOW BASE

Michael R. Hatch, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 838,346, Sep. 30, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 20,904

Int. Cl.³ G11B *17/02*

U.S. Cl. 360—98 **13 Claims**



1. A subassembly for a disk file storage apparatus comprising, in combination:

a base formed of opposing housing portions which are substantially symmetrical with respect to an axis of symmetry and provide a symmetrical cavity therebetween, said housing portions being bisected by an imaginary neutral plane that passes at right angles through said axis at a point dividing the base into two essentially identical halves;

a disk/spindle/housing assembly including a plurality of magnetic disks disposed within a housing and rotatably driven by a spindle from externally of the housing;

means for mounting said assembly within said cavity and to said base such that the center of gravity of said assembly is substantially coincident with said neutral plane and the axis of symmetry and axis of said spindle are coincident and normal to said plane and substantially centered between said opposing housing portions;

two sets of magnetic heads;

two electromagnetically controlled actuator devices, each comprising a stationary magnet structure and a movable portion, one such movable portion associated with each set of heads for moving the latter in directions parallel to said plane for transducing engagement with corresponding ones of said disks;

means supporting said movable portions on the housing of said assembly in substantially diametrically opposed relation outboard of said disks for movement radially thereof; and

means securing said magnet structures to said base, and within said cavity in substantially diametrically opposed relation, such that their centers of force substantially coincide with said neutral plane to substantially eliminate any bending moments on the base resultant from translational movement of said movable portions.

4,263,630

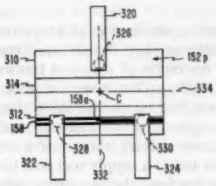
UNIFORMLY LOADED OPPOSITE MAGNETIC TRANSDUCER ASSEMBLY

Dwight L. Pierson, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 967,330, Dec. 7, 1978, abandoned. This application Aug. 28, 1979, Ser. No. 70,452

Int. Cl.³ G11B *5/48, 21/16*

U.S. Cl. 360—104 **3 Claims**



1. In a method of adjusting the forces applied by a transducer on its active face due to a gimbal spring carrying the transducer and carried by a support spaced from the transducer, said spring comprising a pair of relatively thin, flexible leg portions extending generally in the same direction and fixed at ends thereof to the support and the gimbal spring including a portion bridging the other ends of said leg portions on which said transducer is mounted, said transducer having an active face which is adapted to contact a moving magnetic medium and which has active flat face portions located on both sides of a first center line extending through the center of said active face and also located on both sides of a second center line extending through said center of the active face and perpendicular to said first center line, the steps which comprise:

holding said support fixed,

moving said transducer against the flexing action of said flexible leg portions to bring said active flat face portions into a certain plane with said support remaining in a fixed position,

determining the amount that the magnitudes of moments of forces about said two center lines differ from a certain magnitude of moment by measuring and comparing the forces at a plurality, more than two, points on said active face of the transducer with its said active face portions held in said plane against the forces from said flexible leg portions on said transducer and with said support remaining in its fixed position, two of said points being on opposite sides of said first center line and spaced from said second center line on one side thereof and another of said points being on the other side of said second center line, and

bending said flexible leg portions so that they take a permanent set from other than their original shapes to provide changed and equal moments of forces about said two center lines by said flexible leg portions as indicated by said determining of moments and measuring and comparing of forces as aforesaid.

4,263,631

OPERATING MECHANISMS OF TAPE RECORDERS

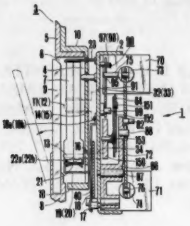
Hiroyoshi Takanashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 26, 1979, Ser. No. 52,232

Claims priority, application Japan, Jun. 27, 1978, 53/87447[U]; Jun. 27, 1978, 53/87448[U]; Jun. 27, 1978, 53/87449[U]

Int. Cl.³ G11B *15/26, 5/54*

U.S. Cl. 360—105 **10 Claims**



1. In an operating mechanism of a tape recorder of the type wherein according to play, fast forward running and rewinding modes, the operation of a motion transmitting mechanism including a first idler roller, a second idler roller and a third idler roller is switched by an operating plate operatively connected with plungers of a first and a second solenoid so as to selectively transmit driving torque of a driving motor to a take-up reel post and to a supply reel post through said motion transmitting mechanism, the improvement which comprises means to rotate said operating plate about a center of rotation thereof according to the movement of the plunger of an energized one of said solenoid, means to linearly move said operating plate in accordance with the movements of the plungers of said solenoids when they are energized simultaneously; a head mechanism for moving a magnetic head to a play position during the play mode whereas for moving the head away from the play position during another modes; a connecting member connected between said head mechanism and said center of rotation; spring means provided for said connecting member for normally urging said head away from said play position; a brake mechanism operatively connected to the plunger of said first solenoid; and means for operating said brake mechanism to apply a braking force to said take-up reel post and to said supply reel post when neither of said solenoids is not energized and to release said take-up and supply reel posts when at least one of said solenoids is energized.

4,263,632

VIBRATION DAMPER FOR A TRANSDUCER CARRIAGE DRIVE MECHANISM FOR USE IN A DISKETTE SYSTEM

Edward F. Burke, Jr., Reading, Mass., and David S. Dunn, Windham, N.H., assignors to MFE Corporation, Salem, N.H.

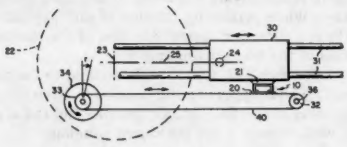
Filed May 11, 1979, Ser. No. 38,348

Int. Cl.³ G11B *21/08*

U.S. Cl. 360—106 **8 Claims**

1. An improvement in the transducer positioning system of a magnetic diskette system, said positioning system including a movable transducer carriage for positioning a transducer over a selected data track of the magnetic recording disk, a stepping motor that produces incremental changes in position of said carriage upon pulsing, and coupling means that couples said carriage and said stepping motor, which improvement comprises:

a mechanical filter including spring means for isolating stepwise movement of said stepping motor from said carriage, said spring means and carriage mass establishing a vibratory system which has a natural frequency of oscillation



different from the frequency of the pulses of said stepping motor so that while the motion of the carriage reflects the total motion of the stepping motor shaft, the incremental motions of the shaft are not transmitted to the carriage thereby minimizing the noise ancillary to the positioning of the carriage.

4,263,633

COMBINED MAGNETIC TAPE HEAD

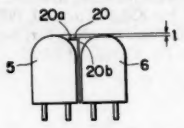
Yozo Yamada; Kazuo Hayashi, both of Tokorozawa, and Heihachiro Kobayashi, Chichibu, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,373

Claims priority, application Japan, May 18, 1978, 53/58283; Jul. 6, 1978, 53/92294[U]

Int. Cl.³ G11B *5/22, 5/10, 5/27*

U.S. Cl. 360—129 **9 Claims**



1. In a combined magnetic head having a pair of recording and reproducing heads, each having an arcuate tape sliding surface and a recess therebetween, the improvement comprising an L-shaped shielding member extending between said heads in said recess and having a tip portion bent in the direction of said recording head.

4,263,634

MAGNETIC DISK-JACKET ASSEMBLY

Roger D. Chenoweth, Rochester, and Donald J. Smith, Byron, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,858

Int. Cl.³ G11B *23/02*

U.S. Cl. 360—133 **7 Claims**

1. In a magnetic record assembly including

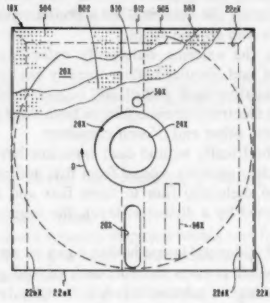
a magnetic disk of thin flexible material;

a jacket having said magnetic disk disposed therein and having panels of a porous, low friction, dusting fabric lining positioned between and adhered to opposite, confronting faces of said jacket and covering substantially all the jacket surface confronting said magnetic disk to line said jacket for snugly encasing said disk and allowing the disk to be rotatably driven within the jacket; and

an elongated opening in said jacket and a gap in said panels having edges that register with said jacket opening so that said opening may receive a magnetic transducer in data transferring relationship with said disk;

the improvement wherein the side edge of said jacket opening and the edge at the panel gap adjacent to which increments of said disk first appear due to rotation of the disk

are spaced from each other with the disk entry side edge of said fabric panel gap being positioned upstream of disk rotation with respect to the disk entry side edge of said



jacket opening, whereby said disk is substantially continuously wiped by said panels while providing a space between said fabric and said jacket opening which excludes frayed or free fibers from the jacket opening.

4,263,635

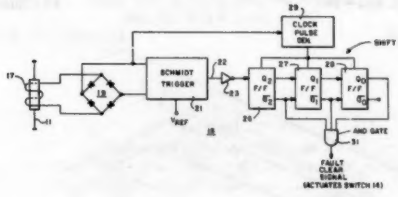
METHOD AND APPARATUS FOR SENSING THE CLEARANCE OF FAULT CURRENT ON AN AC TRANSMISSION LINE

Steven Welk, Valley Stream Apartments M202, Lansdale, Pa. 19466

Continuation of Ser. No. 817,349, Jul. 20, 1977, abandoned. This application Sep. 6, 1979, Ser. No. 72,905

Int. Cl.[3] H02H *3/06*

U.S. Cl. 361—71 **7 Claims**



3. Apparatus for sensing the clearance of a fault current from an AC transmission line and including a non-reusable commutating element for switching fault current through a current limiter comprising: a current transformer connected to said transmission line having a current magnitude output proportional to the current carried by said transmission line; rectifier means connected to the output of said current transformer; reference means for providing a signal related to a predetermined fault threshold level of said transmission line; means for comparing the current magnitude output of said rectifier means to said signal of said reference means during at least a fault condition where said line current is flowing through said current limiter and indicating whether said line current is greater or less than said fault threshold level; and logic means responsive only to a first indication from said comparing means that said line current is greater than said fault threshold level followed in time by at least two subsequent indications from said comparing means that said line current is less than said fault threshold level for producing a fault cleared signal.

4,263,636

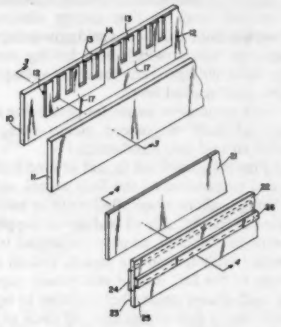
THIN SHEET AIR IONIZER

Anthony Q. Testone, Lee, Mass., assignor to Statics, Inc., Lee, Mass.

Filed Jun. 7, 1979, Ser. No. 46,352

Int. Cl.[3] H05F *3/06*

U.S. Cl. 361—230 **31 Claims**



1. A flexible, miniature air ionizer comprising:

a first planar, linearly extending strip of insulating material,

planar conductive emitter means engaging one side of said first strip and comprising spaced teeth-like elements extending transversely of the length of said strip and having exposed terminals at or within the edges of said strip,

planar, linearly extending strip means of insulating material adjacent to said first strip with said emitter means between them,

a further planar linearly extending strip of insulating material, adjacent said strip means,

a linear conductor between said strip means and said further insulating strip in capacitive relation to said emitter means, and

linearly extending conductor means on the side of said further insulating strip remote from said linear conductor.

4,263,637

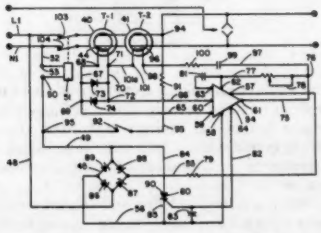
GROUND FAULT RECEPTACLE

Charles W. Draper, Clearwater, and Raymond H. Legatti, Belleair, both of Fla., assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 674,714, Apr. 8, 1976, abandoned. This application Jun. 14, 1977, Ser. No. 806,564

Int. Cl.[3] H02H *3/28*

U.S. Cl. 361—45 **1 Claim**



1. A circuit for providing immunity from noise and nuisance tripping for a ground fault protective device having two or more electrical contacts connected to an electrical distribution system having two or more conductors, said circuit comprising:

a means for tripping the electrical contacts of the ground

fault protective device, said means for tripping being part of said device, and connected to a first of the two conductors;

a power supply connected directly to a second of the two conductors and also connected to said means for tripping, said means for tripping being a selected impedance for limiting current to said power supply when noise voltage in the electrical distribution system exceeds a predetermined second level so that energy dissipated by said power supply does not exceed said power supply's dissipative capacity, said power supply having means for clipping the noise voltage when the noise voltage exceeds the predetermined second level;

a ground fault responsive means for producing a fault signal, said ground fault responsive means being electrically connected to said two conductors;

a switching means connected to said ground fault responsive means and responsive to the fault signal, said switching means being a silicon controlled rectifier having its anode connected to the AC side of said power supply and also to said means for tripping, its gate connected to circuitry in said ground fault responsive means, and its cathode-gate connected to the DC side of said power supply, thereby causing said silicon controlled rectifier to operate in the half wave mode and commutate off once every cycle so that, when a fault is removed by opening the electrical contacts, at the next line voltage excursion through zero, the silicon controlled rectifier turns off, said switching means being responsive to a predetermined first level of noise voltage, said switching means causing said means for tripping to be energized by said power supply when said switching means receives the fault signal from said ground fault responsive means; and

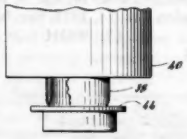
wherein said predetermined second level of noise voltage is less than said predetermined first level of noise voltage thereby preventing said switching means from responding to noise voltage in the distribution system and, also, preventing inadvertent energizing of said means for tripping.

4,263,638

DIAL WOUND CAPACITOR AND METHOD OF MAKING SAME

Robert M. Stockman, Brookfield Center, and Joseph J. Sipovic, Danbury, both of Conn., assignors to American Radionic Co., Inc., Danbury, Conn.

Filed Jun. 25, 1979, Ser. No. 51,822
Int. Cl.³ H01G 4/38
U.S. Cl. 361—328 **7 Claims**



1. The method of making a cylindrical dual metallized capacitor from first and second dielectric film strips metallized on one side thereof and having a metallized edge exposed on said first strip and a metallized edge exposed on said second strip opposite the metallized edge on said first strip, comprising the steps of

(a) initially winding said first and second strips in substantially cylindrical form with the non-metallized sides of each strip in contact with the metallized side of the other strip to a position preceding a gap in at least one of said metallized sides formed by the removal of metal from an intermediate position of said strip, said gap having a length as measured along the length of the dielectric films being substantially less than the length of a winding of said capacitor,

(b) inserting and winding a layer of insulating material between said first and second strips, said insulating layer overlying and encircling said gap and extending outwardly from one side of said capacitor to form an overlapping circular barrier separating the metallized portions on each side of said gap,

(c) completing the winding for a predetermined length of said first and second strips,

(d) fusing the extreme outwardly extending overlapping edges of said circular barrier thereby enclosing said gap,

(e) metal coating each end of said capacitor so formed, and

(f) making electrical connections on both sides of said barrier and to the other end of said capacitor.

7. In a cylindrically wound dual capacitor having predetermined capacitor sections wound from first and second lengths of metallized dielectric film to form first and second metal layers separated by a dielectric layer, the improvement comprising:

(a) each of said metal layers having a gap on a predetermined intermediate portion thereof, each of said gaps having a length which is substantially less than the length of a full winding of said capacitor,

(b) a dielectric sheet completely encircling said gaps and overlapping on each side of said gap and being fused at each over-lapping sides,

(c) said dielectric sheet separating said first and second metal layers on opposite sides of said gap and extending outwardly from said capacitor on each end thereof to form a circular barrier separating said metal layers on each side of said gaps,

(d) means for separately making electrical contact with said metallic layers within and outside said barrier

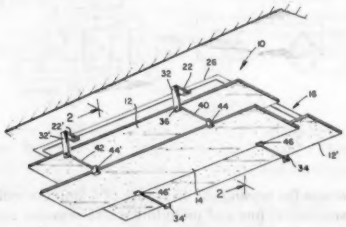
on each end of said capacitor whereby two completely separate capacitors are provided in the same cylindrical form.

4,263,639

LIGHT DISPERSION SYSTEM WITH SUBSTITUTED DIFFUSION PANELS

Louis L. Schacht, 278 Crosse Dr., Cranbury, N.J. 08512

Filed Sep. 24, 1979, Ser. No. 77,947
Int. Cl.³ F21S 1/14
U.S. Cl. 362—147 **10 Claims**

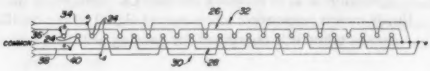


1. In combination with a recessed ceiling mounted lighting fixture having a fluorescent light source including a light transmitting panel substantially coincident with the ceiling surface, the improvement comprising a light dispersion system having a plurality of substantially planar translucent diffuser panels for use in substitution of the said light transmitting panel, attachment means including a set of brackets adapted for interfitting securement to the recessed lighting fixture for suspending the diffuser panels in substantially horizontal planes below the light source and in vertical spaced relationship from the ceiling surface extending beyond the marginal periphery of the lighting fixture whereby the diffuser panels disperse incident light emitted from the light source by refraction and reflection toward the ceiling surface to increase the effective field of illumination.

4,263,640
LIGHTING DEVICE

Peter W. Altman, Philadelphia, Pa., assignor to Light & Sound Specialties, Inc., Philadelphia, Pa.

Filed Nov. 29, 1977, Ser. No. 855,634
Int. Cl.[3] F21P 5/00, 5/02
U.S. Cl. 362—252 10 Claims



1. A lighting device for producing a chasing light effect, comprising:

a first transparent tube,

a star connected network disposed within said first tube, said network having three or more conductors, three or more flexible branches and a common, each of said branches being provided with plural miniature light sources connected to said common, and each of said conductors being connected to no more than one of said branches,

said miniature light sources being spatially interleaved in a repetitive arrangement within said first tube such that each miniature light source of each branch is located between and spaced apart from two miniature light sources of two of the other branches,

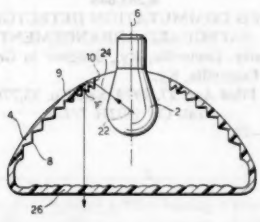
connecting means for electrically connecting said first network to a sequencer for exciting said first network branches in a predetermined sequence, and

a first coupler secured at one end to said first transparent tube and at the other end to said connecting means, said connecting means and first network being electrically connected within said first coupler.

4,263,641
REFLECTOR FOR LIGHTING AND/OR INDICATOR DEVICES ESPECIALLY FOR VEHICLES

Giorgio Ferrero, Neive, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Nov. 7, 1978, Ser. No. 958,468
Int. Cl.[3] F21V 5/02, 13/02
U.S. Cl. 362—293 3 Claims

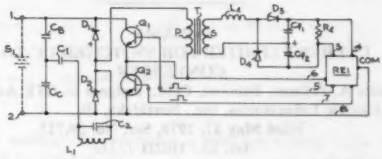


1. A reflector for a lamp comprising a body of transparent material, substantially in form of a paraboloid, having an inner surface and an outer surface, said body of transparent material being provided on its inner surface with a plurality of circular ridges of generally triangular cross section, each ridge being defined by a cylindrical surface portion, which lies on a cylinder having its axis coincident with the axis of symmetry of said body, and by a frusto-conical surface portion, adjacent to said cylindrical surface portion, which lies on a cone having its axis coincident with said axis of symmetry, all the cones defining the frusto-conical surface portions of said body having a common apex located on said axis of symmetry in such a position that, when a light source is placed in proximity of this position, light rays coming from the light source are refracted by said cylindrical surface portions, then reflected by the outer surface of said body and finally refracted by said frusto-conical surface portions in a direction parallel to said axis of symmetry.

4,263,642
DC TO DC CONVERTER

David H. Simmons, Palo Alto, and Alfredo A. Panelo, San Jose, both of Calif., assignors to Litton Systems, Inc., San Carlos, Calif.

Filed Mar. 28, 1979, Ser. No. 24,556
Int. Cl.[3] H02M 3/335
U.S. Cl. 363—17 4 Claims



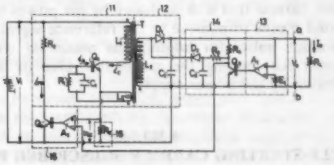
1. In a DC to DC converter having a transformer with a primary winding and a secondary winding, a pair of input capacitors for serial connection across a supply of input potential, switching means for causing current to flow selectively in opposite directions through the primary winding, a pair of diodes for limiting the voltage across the primary winding, a load, voltage rectifier means connecting the load to the secondary winding, and means responsive to the output across the load for controlling the switching means, the improvement comprising:

a two stage filter connected between the input capacitors and one side of the primary winding, the filter being tuned to a first frequency, equal to the desired switching rate of the switching means and to a second frequency equal to the third harmonic of the first frequency.

4,263,643
SWITCHING REGULATOR PROVIDED WITH ERROR AMPLIFIER CIRCUIT HAVING OVERCURRENT PROTECTING FUNCTION

Tsutomu Koike, Higashimatsuyama, Japan, assignor to Toko, Inc., Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 70,999
Claims priority, application Japan, Sep. 4, 1978, 53-108357
Int. Cl.[3] H02M 3/335
U.S. Cl. 363—19 3 Claims



1. A switching regulator comprising an oscillator circuit for chopping a DC voltage supplied from a source of input voltage to thereby drive a transformer; a first rectifier circuit for rectifying an AC output voltage derived from the transformer; a voltage comparator for comparing a DC output voltage available from the rectifier circuit with a reference voltage to provide a voltage corresponding to the deviation of the DC output voltage from the reference voltage; an error amplifier circuit for amplifying the output of the voltage comparator; a current detector circuit for detecting a current proportional to the transformer driving current provided by the oscillator circuit; and a control circuit adapted for comparing the output of the current detector circuit with the output of the error amplifier

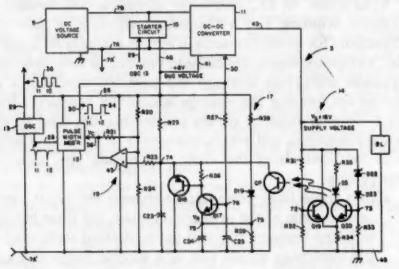
circuit and also adapted, only when the current detector circuit output exceeds the error amplifier circuit output, to apply to the oscillator circuit a trigger signal for changing the oscillation of said oscillator circuit from an ON state to an OFF state, the improvement where a power supply for said error amplifier comprises a second rectifier circuit for rectifying said output of the transformer when the oscillator is in the ON state to obtain a further DC voltage and means for so applying said DC output voltage and said further DC voltage to the error amplifier circuit that the operation range of the error amplifier circuit is limited by the difference between a voltage proportional to said DC output voltage and a voltage proportional to said input voltage.

4,263,644

CURRENT LIMITER FOR SWITCHED DC-TO-DC CONVERTER

Neale A. Zellmer, Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed May 17, 1979, Ser. No. 39,727
Int. Cl.³ H02H 1/122
U.S. Cl. 363—26 **12 Claims**



1. In a power supply including a pulse width modulator; a DC-to-DC converter that is powered by input line current from an external source, is driven by voltage pulses from the modulator, and is operative for converting a DC input voltage from the source to a first DC voltage for driving a load impedance; and comparator means responsive to variations in the magnitude of the first voltage from a prescribed value for producing an error voltage for driving the modulator to vary the width of voltage pulses and thus the converter duty cycle and value of line current drawn by the converter, the improvement comprising:

first means for producing a reference signal with a parameter having a value that is a measure of a maximum value of line current that is to be drawn by the power supply, and;

second means responsive to the reference signal and to the voltage pulses for limiting the maximum width of the latter for limiting the maximum value of line current drawn by the power supply.

4,263,645

SELF-STARTING CARRIER SUBSCRIBER POWER SUPPLY

Neale A. Zellmer, Belmont, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

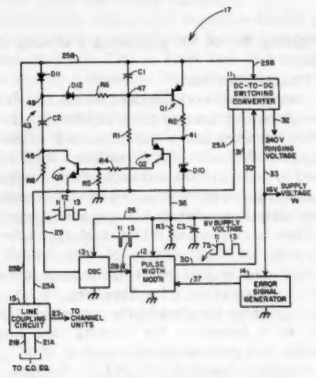
Filed Apr. 30, 1979, Ser. No. 35,029
Int. Cl.³ H02M 7/00
U.S. Cl. 363—49 **7 Claims**

1. In combination with power supply circuitry including DC-to-DC converter means for producing a first relatively constant DC voltage on a bus for powering an oscillator means thereof which drives the convertor means, starter apparatus responsive to application of a DC input voltage to it and the converter means for firmly turning on the circuitry, said apparatus comprising:

first means responsive to a DC input voltage that is applied to input terminals and which is greater than a prescribed value for operating in a conduction state for establishing a second DC voltage, that is less than the first voltage at a node thereof,

second means, which is a switch means, responsive to the second voltage for operating in a closed state for coupling the second voltage to the bus for energizing the oscillator means for causing it to drive the converter means into operation so as to produce the first DC voltage on the bus,

thirds means responsive to an output signal of the oscillator means when it is energized for causing said first means to



operate in a non-conduction state for removing the second DC voltage from said node thereof, and

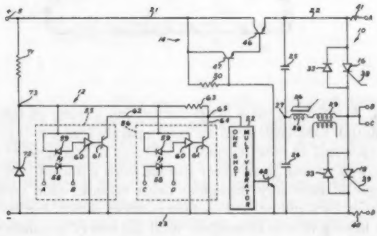
fourth means responsive to operation of said second means in the closed state for disabling said third means so that said first means continues to operate in the conduction state, establishment of the first voltage on the bus by the converter means opening said second means for disabling said fourth means which then enables said third means to cause said first means to operate in a non-conduction state to turn off the starter apparatus.

4,263,646

MISSED COMMUTATION DETECTOR AND SAFEGUARD ARRANGEMENT

Brent A. Beatty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 27, 1979, Ser. No. 33,776
Int. Cl.³ H02H 7/122
U.S. Cl. 363—58 **3 Claims**



1. An improved direct current to alternating current inverter comprising:

a pair of gate controlled semiconductor switching devices coupled in series with each other across a source of DC voltage,

missed commutation detection means coupled to each of said devices for generating a control signal upon the concur-

rence of preselected short circuit conditions across said devices, said missed commutation means comprising a pair of gates forming an ORing logic arrangement, each gate responding to the instantaneous voltage across each of said devices, said control signal being produced whenever both of said devices concurrently exhibit a low voltage thereacross,

normally closed current controlling switch means coupled intermediate said devices and said source and responsive to said control signal to isolate said DC voltage from said devices, and

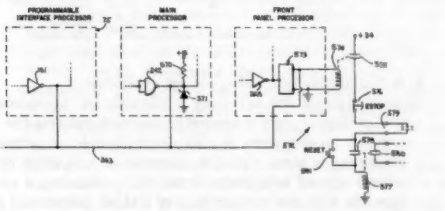
timer means responsive to said control signal for generating a switching signal, said switching signal operative to open said current controlling switch for a preselected time and to reclose said switch after the passage of said preselected time, whereby current through said inverter is electrically isolated from said source in response to a missed commutation and recoupled thereto a preselected time thereafter.

4,263,647

FAULT MONITOR FOR NUMERICAL CONTROL SYSTEM

Gregory L. Merrell, Cleveland Heights, and Theodore L. Bernhard, Mentor On The Lake, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Feb. 7, 1979, Ser. No. 9,938
Int. Cl.[3] G06F *15/16, 11/30*
U.S. Cl. 364—101 **7 Claims**



1. In a numerical control system having a plurality of separately operating programmed processors which operate together to control a machine tool, the improvement therein comprising:

a set of watchdog timer circuits, one associated with each of said processors and each watchdog timer circuit having an input terminal which periodically receives a signal from its associated processor that resets the watchdog timer and each having an output terminal at which a fault indicating logic signal is generated when the watchdog timer is not reset by its associated processor within a preset time interval;

a fault monitor line coupled to the output terminal of each of said watchdog timer circuits; and

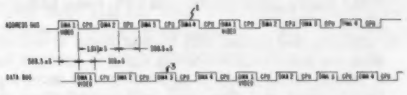
an emergency stop circuit coupled to said fault monitor line and being operable to indicate a malfunction condition when any one of said watchdog timer circuits generates a fault indicating logic signal.

4,263,648

SPLIT SYSTEM BUS CYCLE FOR DIRECT MEMORY ACCESS OF PERIPHERALS IN A CATHODE RAY TUBE DISPLAY SYSTEM

John P. Stafford; Richard A. Slater, both of Nashua, N.H.; Frederick E. Kobs, Pepperell, Mass., and Joseph L. Ryan, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 26, 1978, Ser. No. 973,290
Int. Cl.[3] G06F *1/04, 3/00*
U.S. Cl. 364—200 **2 Claims**



1. A method for generating a split bus timing cycle in a terminal system having:

a system bus including a control bus, an address bus and a data bus;

a memory subsystem coupled to said system bus;

a central processor subsystem coupled to said system bus and to said memory subsystem;

a plurality of peripheral subsystems coupled to said system bus and to said memory subsystem;

timing means, coupled to said control bus including:

a clock generator;

a shift register;

a plurality of storage elements;

said method comprising the steps of:

a. generating successive clocking signals as an output of said clock generator;

b. applying said successive clocking signals to said shift register;

c. generating a plurality of first and second shift register signals from said shift register stages, each of said plurality of shift register signals being in a first state for a first predetermined number of said clocking signals and being in a second state for a second predetermined number of clocking signals;

d. setting a first storage element when said first of said shift register signals is in a first state and resetting said first storage element when said first of said shift register signals is in a second state, said first storage element setting and resetting on the rise of said clocking signals;

e. setting a second storage element when said second of said shift register signals is in a first state and resetting said second storage element when said second of said shift register signals is in a second state on the rise of said clocking signals;

f. applying the output of said first storage element to said central processor subsystem when said first storage element is reset and applying the output of said first storage element to said plurality of peripheral subsystems when said first storage element is set;

g. applying the output of said second storage element to said central processor subsystem when said second storage element is set and applying the output of said second storage element to said plurality of peripheral subsystems when said second storage element is reset;

h. gating said central processor subsystem address signals by the output of said first storage element when said first storage element is set thereby generating an address bus CPU cycle.

i. gating said plurality of peripheral subsystem address signals by the output of said first storage element when said first storage element is reset thereby generating an address bus DMA timing cycle;

j. gating the signals representative of a data transfer between said central processor subsystem and said main memory

subsystem by the output of said second storage element when said second storage element is reset thereby generating a data bus CPU timing cycle;

k. gating the signals representative of a data transfer between one of said plurality of peripheral subsystems and said main memory subsystem by the output of said second storage element when said second storage element is set thereby generating a data bus DMA timing cycle;

i. applying said second shift register signal in said first state and a second phase timing signal in a second state to a first AND gate for generating a first phase timing signal in a first state for defining a CPU phase timing cycle, wherein said address bus DMA timing cycle and said data bus DMA timing cycle overlap said CPU phase timing cycle; and,

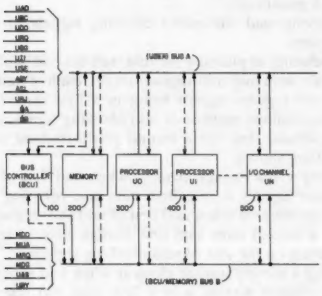
m. applying said second shift register signal in said second state and said first phase timing signal in a second state to a second AND gate for generating said second phase timing signal in a first state, said second phase timing signal in said first state being applied to said first AND gate for generating said first phase timing signal in a second state for defining a DMA phase timing cycle, wherein said address bus CPU timing cycle and said data bus CPU timing cycle overlap said DMA phase timing cycle.

4,263,649

COMPUTER SYSTEM WITH TWO BUSSES

William H. Lapp, Jr., Mohawk, N.Y., assignor to Mohawk Data Sciences Corp., Parsippany, N.J.

Filed Jan. 5, 1979, Ser. No. 1,253
Int. Cl.[3] **G06F** *15/16, 13/00*
U.S. Cl. 364—200 **8 Claims**



1. In a computer system having a plurality of units interconnected by first and second common busses, said units communicating with one another by means of messages, at least one of such messages being a requesting message which includes a command requiring a reply message and the addresses of the sending and receiving units, the computer system comprising:

first, second, third and fourth ones of the units each including message transmitting means and message receiving means, the third and forth units further including means for processing the commands of such requesting messages and for providing a ready to return message signal upon the completion of such processing;

means for coupling the message transmitting means and message receiving means of the first and second units to the first and second busses, respectively, and the message transmitting and message receiving means of the third and fourth units to the second and first busses, respectively;

bus control means including

first means for selectively enabling the message transmitting means of the first and second units to send messages including requesting messages over the first bus during first and second bus transfer intervals such that the message receiving means of the third and fourth units receive such requesting messages containing their respective receiving unit addresses; and

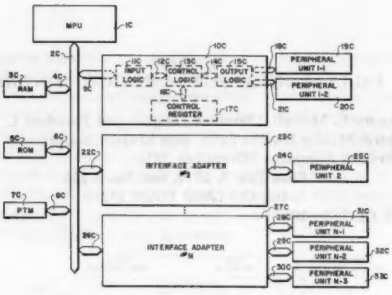
second means operable in response to the ready to return message signals for selectively enabling the message transmitting means of the third and fourth units to return reply messages over the second bus during said first, second or other bus transfer intervals in accordance with the time sequence of such signals and in accordance with a priority schedule when two of such signals compete for the same bus transfer interval.

4,263,650

DIGITAL DATA PROCESSING SYSTEM WITH INTERFACE ADAPTOR HAVING PROGRAMMABLE, MONITORABLE CONTROL REGISTER THEREIN

Thomas H. Bennett; Earl F. Carlow, both of Scottsdale; Edward C. Hepworth, Apache Junction, all of Ariz.; Wilbur L. Mathys, Norristown, Pa.; William D. Mensch, Jr., Norristown, Pa.; Rodney H. Orgill, Norristown, Pa.; Charles I. Peddle, Norristown, Pa., and Michael F. Wiles, Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 519,149, Oct. 30, 1974, abandoned.
This application Jan. 30, 1979, Ser. No. 7,752
Int. Cl.[3] **G06F** *3/04, 9/00, 13/00*
U.S. Cl. 364—200 **6 Claims**



1. A digital data processing system comprising:

processor means for executing a plurality of instructions, said processor means generating control information in response to execution of a first one of said instructions, generating a write signal in response to execution of a second one of said instructions, and generating a read signal in response to execution of a third one of said instructions;

a bidirectional data bus coupled to said processor means;

memory means coupled to said processor means via said bidirectional data bus for storing said instructions and for storing data;

a peripheral data bus for coupling a peripheral device controlled by said digital data processing system to said digital data processing system; and

adaptor means coupled between said peripheral data bus and said bidirectional data bus for effecting transmittal of information between said peripheral device and said digital data processing system, said adaptor means comprising:

(1) control register means for storing said control information in response to said write signal and for sending a representation of said stored control information to said processor means in response to said read signal; and

(2) interface means coupled to said peripheral data bus and responsive to said control information stored in said

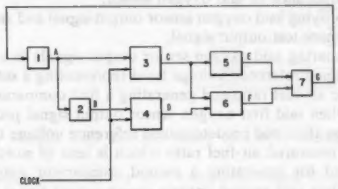
control register means for sending data to and receiving data from said peripheral device.

4,263,651

METHOD FOR DETERMINING THE CHARACTERISTICS OF A LOGIC BLOCK GRAPH DIAGRAM TO PROVIDE AN INDICATION OF PATH DELAYS BETWEEN THE BLOCKS

Wilm E. Donath, Pleasantville, and Robert B. Hitchcock, Sr., Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1979, Ser. No. 40,785
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—300 **7 Claims**



1. A method for determining critical paths within a logic block circuit of the type including a plurality of functional logic block elements interconnected by a plurality of input and output signal conductor paths wherein said plurality of logic blocks includes blocks having a storage element function and wherein said logic block circuit also includes external input conductor paths connected to given ones of said blocks, comprising levelizing of said logic blocks and determining the extreme characteristics of said logic blocks, said levelizing procedure including the steps of:

A. recording in a record means a first list consisting of said logic blocks of said block circuit wherein each of said logic blocks is assigned a different number of a numerical sequence in said list and wherein each of said storage element blocks in said list is designated as a storage element by a unique indicator,

B. selecting from said record means one of said storage element logic blocks recorded in said numerical list and recording in said record means said selected storage element logic block as the initial entry in a second list referred to as an "in-process chain", and assigning a level number "L" of ZERO to said storage element logic block in said second list and designating in said second list that said storage element logic block has been assigned a level,

C. selecting each logic block in said logic block circuit having an input conductor connected to an output conductor of said ZERO level number storage element and recording in said record means each said selected logic blocks in a third list referred to as a "to-be-leveled" chain,

D. determining from said logic block circuit those logic blocks listed in said "to-be-leveled chain" third list which have other input conductors which are connected only to external input conductors and to output conductors from zero level number logic blocks, and removing such determined logic blocks from said "to-be-leveled chain" third list in said record means,

E. assigning a level number "L" of ONE to each of said logic blocks determined in step D, adding said logic blocks to said "in-process chain" second list on said record means, and designating in said second list that said logic blocks have been assigned a level number "L" of ONE,

F. determining from said logic block circuit each of those logic blocks having input conductors connected to output conductors from said logic blocks previously determined in step D and which are not recorded on said "to-be-leveled chain" third list and which are not storage element blocks and which do not have a level number "L" assigned thereto and recording each of said determined logic blocks in said "to-be-leveled chain" third list in said record means,

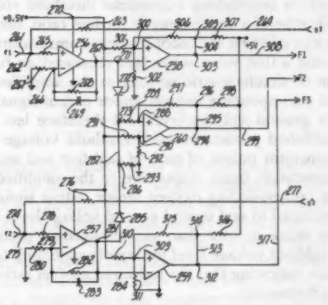
G. and continually repeating steps E and F for the remaining blocks in said logic block circuit and increasing said level number "L" by one increment for each repeat until no block is assigned to the last incremented level number values or no blocks remain listed in said "to-be-leveled chain" third list such that all said logic blocks in said logic circuit have been assigned to a level designated by a level number "L" wherein level ZERO blocks are storage element blocks, level ONE blocks have inputs only from external input conductors and storage element block outputs, and blocks assigned to successive levels have inputs only from external input conductors, storage element blocks and outputs from logic blocks of proceeding levels.

4,263,652

OXYGEN SENSOR SIGNAL CONDITIONER

Robert S. Henrich, Farmington Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,985
Int. Cl.³ F02B *75/10*; F02D *28/00*; G01N *31/00*
U.S. Cl. 364—431 **8 Claims**



Oxygen Sensor Signal Conditioning System

4. In an internal combustion engine having an intake system, an exhaust system, an engine block, a plurality of cylinders disposed in said engine block, a piston operatively mounted for reciprocal movement within each of said plurality of cylinders in response to the combustion of fuel and air therein, means disposed at least partially within said intake system for controlling the quantity of air supplied to said cylinders, means for supplying a controlled quantity of fuel to one or more of said plurality of cylinders, control means responsive to one or more predetermined control signals for operatively varying the ari-fuel mixture in said engine, first and second oxygen sensors, one oxygen sensor being operatively disposed in each of the two major exhaust streams of said internal combustion engine, each of said oxygen sensors being responsive to the relative air-fuel mixture existing in said corresponding exhaust stream and generating an oxygen sensor output signal having a first general voltage level if said measured air-fuel ratio is "lean" of stoichiometric and a second general voltage level if said measured air-fuel ratio is "rich" of stoichiometric, each of said oxygen sensors being characterized in that the impedance thereof decreases as its operating temperature increases and in that measurements taken below some minimum temperature such as 300° Centigrade are inherently unreliable due to excessively high internal sensor impedance, an oxygen sensor output signal conditioning system for insuring that only reliable output signals indicative of said rich or lean air-fuel mixture measurements are outputted for control purposes, said oxygen sensor output signal conditioning system comprising:

first and second means for supplying first and second test currents to said first and second oxygen sensors, respec-

tively, and producing corresponding first and second oxygen sensor test output signals indicative of the measured sensor impedance, which is a function of sensor-operating temperatures, said first and second test current supply means being utilized to avoid cross-coupling of test currents and sensor signals between said first and second oxygen sensors;

first and second monitoring amplifiers having relatively little current flowing into or out of their input terminals for amplifying said first and second oxygen sensor output signals and said first and second oxygen sensor test output signals from said first and second oxygen sensors, respectively, and for optimizing the test current supplied to said first and second sensors by said first and second test current supply means via the high input impedance of said first and second monitoring amplifiers;

first and second output comparators each having first and second comparator inputs and a comparator output, the first input of each of said first and second output comparators being operatively coupled to receive said oxygen sensor output signals and said oxygen sensor test output signals from said first and second oxygen sensors, respectively;

first and second means operatively coupled to the second comparator inputs of said first and second output comparators for establishing a reference threshold voltage level indicative of a stoichiometric air-fuel ratio, the output of each of said first and second output comparators normally having a first value when said measured air-fuel ratio is lean of stoichiometric so long as the amplified value of said corresponding oxygen sensor output signal is at said first general voltage level and therefore less than said established predetermined threshhold voltage level, the comparator output of each of said first and secon output comparators being responsive to the amplified value of said corresponding oxygen sensor output signal being at least equal to said second general voltage level and therefore being greater than said established predetermined threshhold voltage level for rapidly switching to a second value indicating that the measured air-fuel ratio is rich of stoichiometric;

a single test comparator having first and second test comparator inputs and a test comparator output;

first and second diode means operatively coupling the output of said first and second monitoring amplifier to said first test comparator input for receiving either of said amplified first and second oxygen sensor test output signals from said corresponding first and second monitoring amplifier means;

means operatively coupled to said second test comparator input for establishing a test threshhold level indicative of a predetermined maximum sensor impedance value and therefore a minimum sensor temperature, the output of said test comparator normally generating a GO signal so long as the value of said amplified oxygen sensor test output signals from both of said first and second monitoring amplifiers are less than said established test threshhold voltage level, said test comparator output being responsive to the value of said amplified oxygen sensor test output signals from either of said first and second monitoring amplifiers being greater than said established test threshhold voltage level for rapidly switching to generate an INHIBIT signal, the signal at the output of said test comparator indicating whether said first and second comparator output state signals indicative of a measured lean or rich air-fuel ratio in said exhaust system are sufficiently reliable to be used for generating one or more of said predetermined control signals.

8. In an internal combustion engine system wherein at least one oxygen sensor is operatively disposed in the exhaust system for supplying feedback information for controlling the air-fuel ratio of the system, an improved method of accurately distinguishing between oxygen sensor output signals indicative of a rich air-fuel mixture, a lean air-fuel mixture, and those due to high internal oxygen sensor impedance which often occur when said oxygen sensor is relatively cold, said method comprising the steps of:

monitoring the relative percentage of uncombined oxygen existing in the exhaust system as a measure of the actual air-fuel ratios of said internal combustion engine system;

generating a first oxygen sensor output signal when a "lean" air-fuel condition is detected and a second oxygen sensor output signal when a "rich" air-fuel ratio is detected;

periodically generating a test current and transmitting said test current to said oxygen sensor for measuring the internal impedance thereof as an indication of the reliability of said oxygen sensor output signals;

generating an oxygen sensor test output signal in response to the receipt of said test current, said oxygen sensor test output signal being indicative of the measured internal impedance of said oxygen sensor;

amplifying said oxygen sensor output signal and said oxygen sensor test output signal;

comparing said oxygen sensor output signals to a predetermined reference voltage level representing a stoichiometric air-fuel ratio and generating a first comparator output when said first oxygen sensor output signal proves to be less than said predetermined reference voltage to indicate a measured air-fuel ratio which is lean of stoichiometric and for generating a second comparator output signal when said second oxygen sensor output signal proves to be greater than said predetermined reference voltage indicating a measured air-fuel ratio which is rich of stoichiometric;

comparing said oxygen sensor test output signal with a predetermined inhibit threshhold voltage level representing that oxygen sensor impedance and hence that oxygen sensor operating temperature below which said comparator outputs indicative of rich or lean measured air-fuel ratios are to be assumed unreliable and for generating an INHIBIT signal whenever said oxygen sensor test output signal is greater than said predetermined inhibit threshhold voltage level indicating that the inherent impedance of said oxygen sensor is too great to permit a reliable measurement of the air-fuel ratio existing in said exhaust system and for generating a GO signal whenever said oxygen sensor test output signal is less than said predetermined inhibit threshhold voltage level indicating that all first and second oxygen sensor output signals are reliable and may be used for generating control signals for selectively increasing and decreasing the air-fuel ratio in said engine system.

4,263,653

DIGITAL RF WATTMETER

Frank H. Mecklenburg, Russell, Ohio, assignor to Bird Electronic Corporation, Solon, Ohio

Filed Jun. 4, 1979, Ser. No. 45,329

Int. Cl.[3] **G01R** *27/06, 21/00*

U.S. Cl. 364—483 **22 Claims**

1. An electronic instrument for measuring directional RF power levels and power function levels on a coaxial transmission line, said instrument adapted to be inserted in the line, the instrument comprising:

an inductive sensing loop for sensing the RF voltage level on the transmission line and producing a voltage level proportional thereto;

means connected to the sensing loop for detecting the peak envelope voltage wave level on the transmission line;

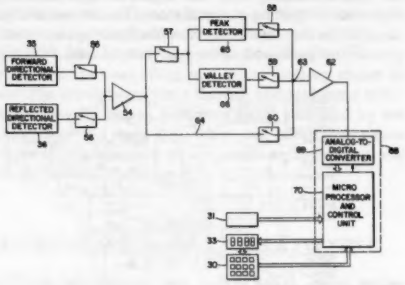
means connected to the sensing loop for detecting the valley envelope voltage wave level on the transmission line;

an analog-to-digital conversion means connected to the sensing loop and the peak envelope detecting means and the valley envelope detecting means for converting the voltage levels from the sensing loop and from the peak envelope detecting means and from the valley envelope detecting means to binary voltage data;

microcomputer means associated with the conversion means

for performing arithmetic operations upon the binary voltage data to calculate power data and power function data, the microcomputer means including means for calculating the carrier wave power from both the peak envelope voltage data and the valley envelope voltage data; and

means connected to the microcomputer means for displaying the power date and the power function data calculated by the microcomputer means.

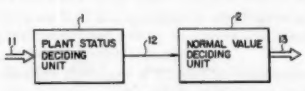


4,263,654

SYSTEM FOR DETERMINING THE NORMAL OPERATING VALUE OF POWER PLANT DATA

Takaharu Fukuzaki, Koganei, and Toshio Kimura, Sagamihara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 28, 1976, Ser. No. 727,454
Int. Cl.[2] G21C *17/00*
U.S. Cl. 364—504 **5 Claims**



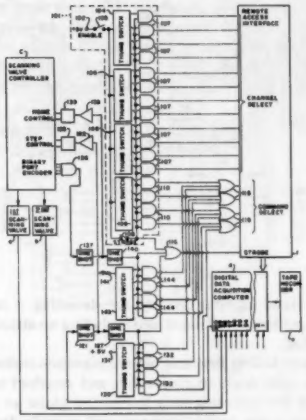
1. A system for determining a value representing a normal operating value of at least one type of plant data corresponding to a presently operating step of an operating plant comprising first means for individually comparing signals representing the present status of a plurality of first types of plant data with signals representing the respective values for a predetermined status thereof and for producing respective output signals corresponding to the individual comparison results, second means for producing a signal corresponding to the present operation step of the plant in response to the signals produced by said first means, third means for storing various values representing normal operating values of at least one second type of plant data corresponding to the various operating steps of the plant, and fourth means for selecting the value representing the normal operating value of the at least one second type of plant data from the values stored by said third means in response to the signal produced by said second means and for producing at least one signal corresponding to the value representing normal operating value.

4,263,655

DIGITAL INTERFACE CIRCUIT FOR CONTROL OF PRESSURE SCANNER

John A. Chappell, Jr., Yorktown, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 26, 1979, Ser. No. 60,948
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—558 **10 Claims**



1. An interface circuit for use in controlling the operation of a plurality of multiple-port single-transducer pressure-scanners, each driven from port to port and to home position by a scanner controller which indicates by digital outputs the port currently scanned, by coupling the scanner controller to a digital data acquisition computer system which scans a plurality of channels to gather data from a plurality of sources, including a channel for each pressure scanner, the computer being of the type which produces a pulse indicating when a specific channel has been scanned, the interface circuit comprising

first binary-coded manual switch means to input to the computer in digital form the first and last channels chosen to be utilized in scanning the plurality of pressure scanners, the chosen last channel being that channel for which the computer produces a pulse,

second binary-coded manual switch means for user preparation of a digital start command for the computer to begin scanning at said chosen first channel

third binary-coded manual switch means for user preparation of a digital post-scan command for the computer,

step control circuit means to simultaneously cause the scanner controller to step each pressure scanner to its next port responsive to reception of said pulse from the computer indicating the last channel has been scanned,

remote access start circuit means responsive to the stepping of the scanners, to input said prepared start command to the computer,

home control circuit means to simultaneously cause the scanner controller to step each pressure scanner to its home port responsive to the digital output of the scanner controller indicating that the last active port has been scanned, and

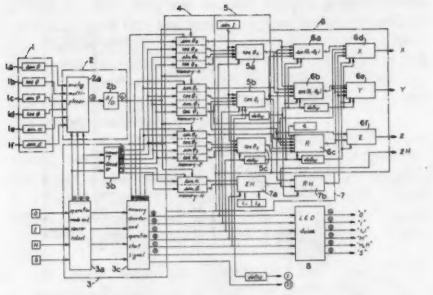
post-scan command circuit means, responsive to the home control circuit means having stepped the scanners to home position, to input such prepared post-scan command to the computer,

whereby the interface circuit causes the digital data acquisition computer to loop repeatedly through the channels so utilized for pressure scanning, requiring only a single channel for each scanner.

4,263,656
VISUAL SIGHTING SYSTEM

Takao Yamaguchi, and Yutaka Ohara, both of Tokyo, Japan, assignors to Hiroyasu Funakubo, Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,276
Claims priority, application Japan, Sep. 4, 1978, 53/108373
Int. Cl.[3] A61F *1/00;* **G06F** *15/20*
U.S. Cl. 364—559 **5 Claims**



4. A visual sighting system for detecting a target object which a person is looking at and including an attitude detector, comprising:

means including first and second direction sensors arranged at a right angle to each other and attached to a person's head for detecting in a horizontal plane an angle θ between a line which connects said attitude detector and a line of force of terrestrial magnetism and thereby for sensing rotation of said person's head around its vertical axis;

means including first and second inclinometers attached to said person's head for detecting in a vertical plane an angle ϕ between the line which connects the attitude detector and target object and a line vertical to the horizontal plane, and thereby sensing the inclination of said person's head with respect to the horizontal plane, said first and second direction sensors providing signals representing the functions $\sin\theta$ and $\cos\theta$, respectively, said first and second inclinometers providing signals representing the functions $\sin\phi$ and $\cos\phi$, respectively.

4,263,657
ELECTRONIC TRIP METER FOR AN AUTOMOTIVE VEHICLE

Takashi Oka, Tokyo; Hideoki Matsuoka, Yokohama; Masanori Mizote, Yokosuka; Kiyoshi Yamaki, Yokohama; Hiroyuki Nomura, Yokohama, and Takaaki Mogi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 13, 1978, Ser. No. 969,276
Claims priority, application Japan, Dec. 21, 1977, 52-154880
Int. Cl.[3] G06M *3/02;* **G01C** *22/00*
U.S. Cl. 364—561 **13 Claims**

1. An electronic trip meter for a vehicle, comprising:

(a) first means for producing a first signal representative of a known distance;

(b) second means for producing a second signal representative of a distance traveled by said vehicle;

(c) third means for producing a third signal representative of the difference between the distances respectively represented by said second signal and another input signal;

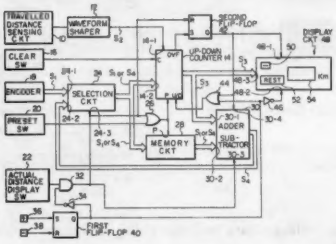
(d) fourth means selectively transmitting said first signal or a fourth signal to said third means as said another input signal;

(e) fifth means for visually indicating the distance represented by said third signal;

(f) sixth means for producing a fifth signal when the distance represented by said second signal exceeds the distance represented by said another input signal;

(g) seventh means for storing said another input signal;

(h) eighth means for producing an output signal representative of the difference between the distance respectively represented by said third signal of said third means and said another input signal stored in said seventh means by subtracting the former from the latter upon absence of said fifth signal, and upon presence of said fifth signal the



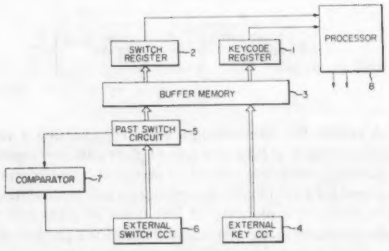
eighth means producing an output signal representative of the sum of the distances respectively represented by said third signal of said third means and said another input signal stored in said seventh means, said output signal of said eighth means being fed to said fourth means as said fourth signal; and

(i) ninth means for controlling said third, fourth and seventh means to set said fourth signal into said third means and store said fourth signal into said seventh means in place of said first signal.

4,263,658
ELECTRONIC APPARATUS CAPABLE OF STORING OPERATIONAL SEQUENCE

Takayuki Fujita, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,142
Claims priority, application Japan, Mar. 28, 1978, 53-35656
Int. Cl.[3] G06F *3/023*
U.S. Cl. 364—709 **4 Claims**



1. An electronic apparatus comprising:

mode setting means, and keyboard input means having a plurality of input keys for entering information;

mode memory means coupled to said mode setting means for storing mode information;

input information memory means coupled to said keyboard input means and said mode memory means for storing the operation sequence of said input keys and information set by said mode setting means;

comparing means coupled to said mode setting means and said mode memory means for comparing the mode information from said mode setting means and the mode information stored in said mode memory means; and

control means coupled to said input information memory means and responsive to the operation of any one of said input keys for controlling said input information memory means to store the content of said mode memory means and the signal produced by the operation of the input keys, for controlling said mode memory means to refresh the mode information from said mode setting means when said comparing means detects incoincidence of information from said mode setting means and said mode memory means, and for controlling said mode memory means to retain the previous contents thereof, and said input information memory means to store a signal produced by the operation of the input key, when said comparing means detects the coincidence of said mode setting means and said mode memory means.

4,263,659

ELECTRONIC INSTRUMENT WITH A FLEXIBLE KEYBOARD

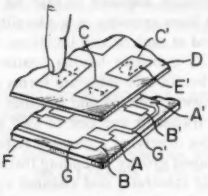
Osamu Hirata, and Mitsuaki Seki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1979, Ser. No. 24,210

Claims priority, application Japan, Mar. 27, 1978, 53-35237; Mar. 27, 1978, 53-35238

Int. Cl.³ G06F *7/48*

U.S. Cl. 364—709 **4 Claims**



1. An electronic apparatus comprising:

a numerical display unit;

a logic arithmetic element;

a flexible substrate having a plurality of sets of pairs of receiving electrodes and transmitting electrodes; and

a flexible transparent sheet having a plurality of transparent electrodes disposed on an upper surface thereof in such a relation that each of the transparent electrodes is located opposite and associated pair of receiving and transmitting electrodes of said flexible substrate,

wherein a flexible keyboard is formed in combination with said flexible substrate and said flexible transparent sheet, each pair of receiving and transmitting electrodes being adapted to produce a key signal, at least one pair of receiving and transmitting electrodes being used for a power switch, and said power switch being constructed such that it turns on by a change of capacity thereby preventing said power switch from turning on in the event that said flexible keyboard is curved by application of an external force.

4,263,660

EXPANDABLE ARITHMETIC LOGIC UNIT

Jerry E. Prioste, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 20, 1979, Ser. No. 50,382

Int. Cl.³ G06F *7/48*

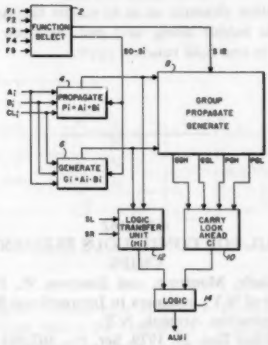
U.S. Cl. 364—716 **10 Claims**

1. An arithmetic logic unit (ALU) for performing binary and BCD arithmetic and a plurality of logic functions on at least first and second data input sets Ai and Bi where i is an integer which varies from 0 to n, comprising:

selection means for enabling said ALU to perform a desired function, said selection means producting a plurality of enabling signals;

first logic means coupled to said selection means and to said data input sets for generating propagate (Pi) and generate (Gi) signals informative to the existence of carry out signals which would result from the combination of bits of equal significance in said at least first and second data sets, said first logic means producing said propagate and generate signals in a first single stage of logic delay;

second logic means coupled to said selection means and to said first logic means for producing group propagate and group generate signals informative of the existence of carry out signals which would result from the combination of predetermined subsets of equal significance of said at least first and second data sets, said second logic means



producing said group propagate and group generate signals in a second single stage of logic delay;

carry look-ahead means coupled to said selection means and to said first and second logic means for generating carry signals Ci in a third single stage of logic delay;

third logic means coupled to said selection means and to said first logic mens for generating signals Hi representative of half-sums of corresponding bits in said at least first and second data sets, said third logic means producing said half-sums in said second stage of logic delay; and

fourth logic means coupled to said selection means, to said third logic means and to said carry look-ahead means for combining said half sums Hi and said carry signals Ci to produce a desired ALU output in a fourth single stage of logic delay.

4,263,661

MAGNETIC BUBBLE DOMAIN ORGANIZATION USING DOUBLE PERIOD INPUT/OUTPUT DEVICES

Thomas T. Chen, Placentia, and Isoris S. Gergis, Yorba Linda, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 11, 1979, Ser. No. 47,438

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—15 **7 Claims**

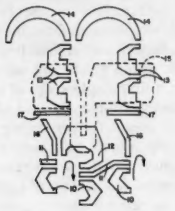
1. A magnetic bubble device comprising:

a layer of magnetic material in which magnetic bubbles can be propagated in response to an external rotating field;

said layer comprising a plurality of discrete storage regions, each of said storage regions being sufficiently spaced apart from one another to prevent bubble-bubble interaction between bubbles in adjacent storage regions, each of said storage regions comprising a first plurality of propagation elements;

a path comprising a second plurality of propagation elements located adjacent to said plurality of storage regions so that each one of said storage regions has access to said path at distinct and different positions along said path,

each of said second plurality of propagation elements being sufficiently larger in size than each of said first plurality of



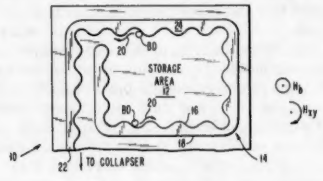
propagation elements so as to enable the movement of a magnetic bubble along said path between said storage regions in one field rotation cycle.

4,263,662

GUARD RAIL FOR CONTIGUOUS ELEMENT BUBBLE CHIPS

George E. Keefe, Montrose, and Emerson W. Pugh, Mount Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,993
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—36 **9 Claims**



1. A magnetic bubble domain chip, comprising:

a magnetic medium in which bubble domains can be moved by a propagation means including patterns of contiguous propagation elements and a reorienting magnetic field substantially in the plane of said patterns,

a storage area in the interior of said magnetic bubble domain chip, said storage area including patterns of contiguous propagation elements for storing bubble domains in positions defined by said contiguous propagation elements,

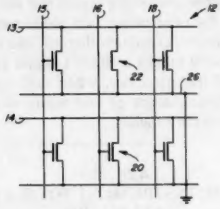
guard rail means generally surrounding said storage area for collecting stray bubble domains from said storage area and for preventing entry into said storage area of stray bubble domains from outside said guard rail said guard rail including a generally spiral shaped pattern of contiguous propagation elements beginning at a location near said storage area and spiralling outwardly toward an edge of said chip, the side of said guard rail nearer to said storage area having a generally undulating edge forming concave and convex portions, the side of said guard rail remote from said storage area being smooth, said guard rail forming a shift register along which said stray bubble domains move in response to the reorientation of said magnetic field, the general direction of movement therealong being away from said storage area.

4,263,663

VMOS ROM ARRAY

Michael W. Powell, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1979, Ser. No. 21,369
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—182 **2 Claims**



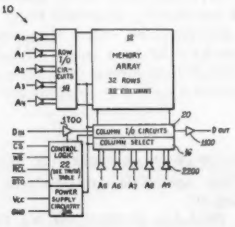
1. An IGFET ROM array comprising: an epitaxial layer of a first conductivity type overlying a semiconductor substrate of a second conductivity type; a plurality of diffused bit lines of said second conductivity type spaced apart in said epitaxial layer; a plurality of spaced apart, conductive word lines overlying said epitaxial layer and said bit lines and insulated therefrom and orthogonally disposed to said bit lines, said word lines and said bit lines crossing at a plurality of locations; a memory bit located at each of said locations, each memory bit including a VMOS transistor having source, drain and gate electrodes and wherein said substrate forms said source electrode of said transistor, one of said bit lines forms said drain electrode of said transistor and one of said word lines forms said gate electrodes overlying a channel region formed along an edge of a V-shaped groove extending through said epitaxial layer and into said substrate, said channel region connecting said source electrode and said drain electrode; selected ones of said memory bits being preprogrammed to an off state by a doped region of said first conductivity type located in said channel region.

4,263,664

NONVOLATILE STATIC RANDOM ACCESS MEMORY SYSTEM

William H. Owen, Mountain View; Richard T. Simko, Los Altos, and Wallace E. Tchon, Sunnyvale, all of Calif., assignors to Xicor, Inc., Sunnyvale, Calif.

Filed Aug. 31, 1979, Ser. No. 71,499
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—185 **11 Claims**



1. A nonvolatile electrically-alterable integrated circuit memory device comprising

means for receiving a low level power supply for said device,

recall command terminal means for receiving an external recall command signal,

store command terminal means for receiving an external store command signal,

memory array means for storing data comprising a plurality of addressable volatile memory cells for storing binary data and a plurality of nonvolatile memory cells associated with said random access memory cells, said nonvolatile memory cells being adapted to copy data from the volatile cells associated therewith upon application of a high voltage store signal thereto, and said volatile memory cells being adapted to copy data from said nonvolatile memory cells respectively associated therewith upon application of low level power supply potential to said volatile memory cells,

high voltage generator means responsive to a signal applied to said store command terminal for utilizing said low level power supply for generating a high voltage pulse signal for effecting transfer of data from said volatile to said nonvolatile memory cells,

recall means responsive to a signal applied to said recall command terminal means for effecting the copying of data by said memory array means from at least one of said nonvolatile cells to at least one of said volatile cells, and

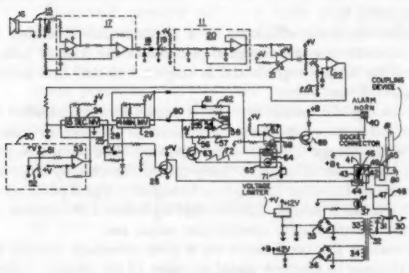
power supply switch means for sensing the low level power supply potential, and for preventing operation of said recall means, for preventing application of a high voltage pulse from said generator means to said memory array means, and for preventing the application of said low level potential to said memory array means unless said potential is within a predetermined operable range.

4,263,665

ULTRASONIC INTRUSION ALARM SYSTEM

Gary P. Watts, Buffalo Grove, Ill., assignor to G.D.I. Electronics, Chicago, Ill.

Filed Jun. 11, 1979, Ser. No. 47,376
Int. Cl.³ G08B *13/16*
U.S. Cl. 367—94 **7 Claims**



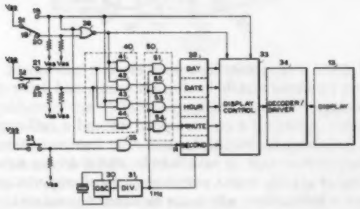
1. An intrusion alarm system comprising, in combination, means for receiving a signal comprising reflected ultrasonic frequency energy modulated by an object moving in a selected field, means for demodulating said signal and providing a control pulse, bistable circuit means for receiving said control pulse and providing first and second output signals, relay means responsive to said first output signal to cause associated lights to be turned-on, capacitor circuit means responsive to said second output signal to permit said capacitor circuit means to charge and discharge, first oscillator means oscillating at frequency varying within a first range and responsive to the charge and discharge rate of said capacitor circuit means, second oscillator means responsive to the varying frequency output of said first oscillator and oscillating at a frequency within a second range and at a varying rate determined by said output of said first oscillator, and a speaker horn coupled to said second oscillator whereby the output of said speaker horn is an increasingly higher frequency sound abruptly terminated and then repeated.

4,263,666

DEVICE FOR CORRECTING DIGITAL DISPLAY USED IN ELECTRONIC TIMEPIECES

Mitsuhiro Murata, Tokyo, Japan, assignor to Citizen Watch Co., Ltd, Tokyo, Japan

Filed Oct. 2, 1978, Ser. No. 947,364
Claims priority, application Japan, Sep. 30, 1977, 52-118094; Jun. 23, 1978, 53-76198
Int. Cl.³ G04C *9/00*
U.S. Cl. 368—187 **12 Claims**



1. In a digital display-type electronic timepiece including oscillator circuit means for producing a high frequency time standard signal; frequency divider means for dividing said high frequency time standard signal and producing a low frequency time keeping signal; multi-stage counter means for counting the low frequency time keeping signal, and display means for displaying the data of said counter means; the improvement comprising:

(a) a crown manually actuated from the exterior of said timepiece;

(b) a stem attached to said crown and movable in the axial direction among three preset positions;

(c) axial switching means for producing selection signals to select data of said multi-stage counter means for correction in response to the selective preset position of said stem;

(d) rotary switching means actuated by the rotation of said stem for further selecting from said data selected by said axial switching means selection signals by causing selective transmission of correction signals;

(e) correction circuit means connected to said axial switching means and to said rotary switching means for enabling the correction of said data selected in response to said selection signals from said axial switching means and for correcting said selected data in response to said correction signals;

(f) said axial switching means comprising a pivoted lever, a first fixed contact and a second fixed contact, said pivoted lever movable among three preset lever positions in response to said selective preset position of said stem; and

(g) said pivoted lever being in contact with said first fixed contact when said stem is located at a first preset position, and in contact with neither of said first and second fixed contacts when said stem is located at a second preset position, and in contact with said second fixed contact when said stem is located at a third preset position, wherein said axial switching means and said correction means inhibit a counter of said multi-stage counter means from correction when said stem is located at a first preset position.

4,263,667
METHODS AND APPARATUS FOR ASSEMBLING AN ELECTRICAL INSTRUMENT

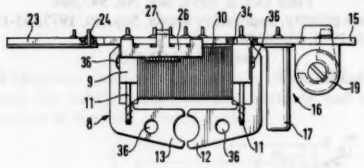
Robert Wolber; Roland Maurer, both of Lauterbach, and Peter Jesse, Schramberg, all of Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Aug. 22, 1979, Ser. No. 68,596

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839555

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—300 **8 Claims**



1. A drive arrangement in a small electric instrument, such as a battery powered watch, having a housing, said drive arrangement being of the type comprising:

a motor including a coil wrapped around a coil support, a stator sheet lamination formed of at least two stator laminations mounted on said bobbin, and a driven rotor;

a printed circuit board carrying said coil support and said stator laminations which are mounted on said coil support, and including a printed electrical circuit for actuating said motor;

said housing including ribs for positioning and securing said circuit board in said housing as said circuit board with said coil and stator laminations is installed as a unit into said housing; and

holding pins integral with said housing for entering holes in said stator laminations to hold the latter in proper orientation as said circuit board is installed into said housing;

the improvement wherein:

said coil includes terminal pins which extend through said circuit board and are electrically and mechanically connected thereto to hold said coil and stator laminations to said circuit board prior to installation into said housing;

said stator laminations are movable relative to said circuit board when carried thereby prior to entry of said holding pins into said holes so that said stator laminations may move relative to said circuit board and into accurate alignment with said holding pins.

4,263,668
METHOD AND CIRCUIT ARRANGEMENT FOR FULL DUPLEX TWO-WIRE TRANSMISSION OF A TERNARY DATA SIGNAL

Adolf Haass, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 61,064

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839231

Int. Cl.³ H04L *5/14*

U.S. Cl. 370—24 **7 Claims**

1. A method for full duplex two-wire transmission of a ternary data signal whose ternary values are formed of positive signal portions, negative signal portions and zero signal portions, in which disruptions of a received signal at a station by the transmission signal of the station are prevented with the assistance of a simulated signal, comprising the steps of:

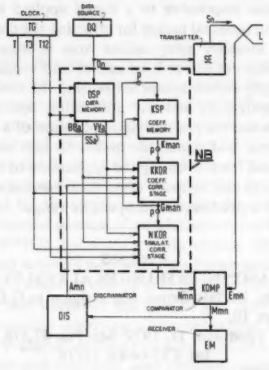
assigning c-d coefficients each having p bits to each ternary value of the ternary data signal, where c signifies a predetermined plurality of sub-intervals of the ternary value interval, d signifies a predetermined plurality of coefficients per sub-interval, and p signifies a predetermined plurality of bits;

storing information concerning the sequence of the transmitted ternary values and providing storage signals during each sub-interval to indicate the last d ternary values, and respectively assigned d coefficients;

forming a simulated signal from the coefficients of a sub-interval;

comparing the values of the received signal occurring during the sub-intervals with the simultaneously occurring values of the simulated signal to provide a first or second binary comparison value indicating whether the concerned value of the received signal is less than or greater than the value of the simulated signal; and

correcting the coefficients and reassigning the corrected coefficients to the ternary values of a ternary data signal



while disregarding change of the coefficients in response to zero signal portions of the ternary values of the storage signals, by

increasing the coefficients by a predetermined number in response to negative signal portions of the ternary values of the storage signals and in response to said first binary comparison value,

increasing the coefficients by a predetermined number in response to positive signal portions of the ternary values of the storage signals and in response to said second binary comparison value, decreasing the coefficients by a predetermined number in response to negative signal portions of the ternary values of the storage signals and in response to said second binary comparison value, and

decreasing the coefficients by a predetermined number in response to positive signal portions of the ternary values of the storage signals and in response to said first binary comparison value.

4,263,669
PATTERN GENERATION SYSTEM

Dieter E. Staiger, Weil im Schonbuch, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,073

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829709

Int. Cl.³ G01R *31/28;* **G06F** *11/00*

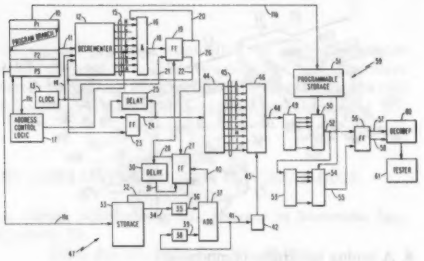
U.S. Cl. 371—27 **6 Claims**

1. A pattern generator for supplying to a tester a series of pulse patterns without transient switching times between the patterns comprising:

a first memory

said first memory storing programmed sequences of pulse

patterns, each of said patterns comprised of a series of cycles and each cycle being of a respective time duration,
a clock providing spaced clock pulses,
a clock driven down counter coupled to said clock and down counting in selected time increments,
pulse selection means for positioning a pulse within said cycle time,
a cycle start flip-flop for providing a cycle start signal to said pulse selection means,
an address control logic circuit having inputs from first said memory and from said counter, for determining prior to the end of each cycle time if a different pattern with a different cycle time is programmed,
output selection means, comprising,
a first input coupled to said counter and being responsive to a selected output of said counter for providing an output trigger signal,
a second input coupled to said clock,



a first output including feedback means for returning said trigger signal to said selection means for terminating said trigger signal when a coincidental clock signal is received with said feedback signal, and
a second output means for feeding a start signal to said counter for setting said counter to load the next cycle from said memory and to a cycle start flip-flop for providing a cycle start signal to said pulse selection means when said trigger signal is terminated,
a programmable control circuit including variable delay means positioned between said cycle start flip-flop and said pulse selection means for extending the cycle time by increments smaller than the increments provided by said down counter by selectively delaying the transmission of said cycle start from said cycle start flip-flop to said pulse selection means, and
a decoder coupled between said pulse selection means and the tester.

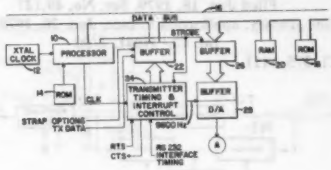
4,263,670

MICROPROCESSOR DATA MODEM

James B. Sherman, Huntsville, Ala., assignor to Universal Data Systems, Inc., Huntsville, Ala.

Filed May 11, 1979, Ser. No. 38,310
Int. Cl.³ H04J *3/12*; H04L *27/06*
U.S. Cl. 375—9 **12 Claims**

1. A data modem comprising:
a microprocessor having an associated clock, instruction memory, a memory containing data tables, and a memory for storage of operational data;
a data bus for coupling the microprocessor to said memories, for coupling control and data signals to the microprocessor, and for coupling data from the microprocessor;
a transmitter section having a digital subsystem provided by said microprocessor and associated data bus and memories and operative to encode data from a source into DPSK form;
the transmitter section having an analog subsystem operative to convert the encoded data into an analog DPSK signal for transmission on a voice grade line;
the transmitter section including:
means operative to couple via the data bus a representation of data from said source to said microprocessor;
digital-to-analog converter means operative in response to digital data coupled thereto by the data bus from the microprocessor to provide the analog signal;
timing and interrupt control means operative to provide timing and control signals via the data bus for the microprocessor;
said microprocessor being operative to provide a training sequence, to scramble data to be transmitted, to digitally



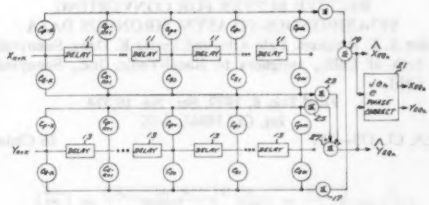
synthesize the DPSK signal and to control transmitter operation;
a receiver section including an analog subsystem operative to receive a DPSK signal from a voice grade line and a digital subsystem provided by the microprocessor and associated data bus and memories, and operative to convert the received analog signal into digital form and to decode the data; and
said microprocessor being operative to provide coherent detection of the received signal, adaptive equalization, data recovery, descrambling of data, receiver training sequence generation and control, clock phase correction, signal quality measurement, and phase offset detection.

4,263,671

SAMPLING CLOCK CORRECTION CIRCUIT

Ran F. Chiu, Miami; Henry H. Parrish, Miami Springs; Philip F. Kromer, III, Coral Gables, and Ming L. Kao, Miami, all of Fla., assignors to Racal-Milgo, Inc., Miami, Fla.

Filed Oct. 19, 1978, Ser. No. 952,831
Int. Cl.³ H03K *5/159*; H04L *25/08*
U.S. Cl. 375—15 **22 Claims**



1. In a data modem having a main channel for receiving a main channel line signal, a means for generating and initially approximately timing a sampling signal for use in sampling said line signal and responsive to a correction signal for adjusting the phase of said sampling signal, and a means for producing a second channel signal as a function of said main channel signal, the apparatus comprising:
means for removing distortion from said main channel signal to produce a corrected output signal including an equalizer means having a plurality of adjustable multiplying coefficients, and a means for producing an error signal indicative of the difference between the corrected and ideal output signal;

means including an equalizer means having a number of multiplying coefficients for removing distortion from said second channel signal to produce a corrected second channel signal; and

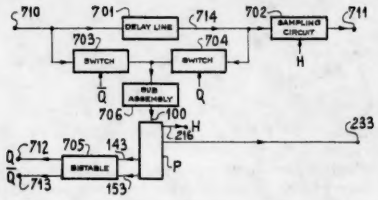
means for correlating said corrected second channel signal with said error signal to derive a correction signal for correcting the timing phase of said sampling signal.

4,263,672

APPARATUS FOR SYNCHRONIZATION ON THE BASIS OF A RECEIVED DIGITAL SIGNAL

Pierre Deman, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 18, 1979, Ser. No. 49,127
Claims priority, application France, Jun. 20, 1978, 78 18406
Int. Cl.[3] H04L 7/00
U.S. Cl. 375—111 **4 Claims**



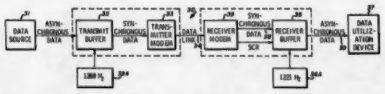
1. Apparatus for synchronization in digital transmission on the basis of a received digital message, comprising: a delay line with an input for receiving the digital message and an output, the digital message being made up of indexing bits followed by information bits and being subject to strong disturbance by noise; a control system having an input, a clock circuit and means for regulating the clock circuit by the timing of the message received; a switching system for linking the input of the control system to either the input or the output of the delay line; and a control circuit for controlling the switching system, said control circuit being coupled to the control system, for enabling said clock circuit regulating means to control the phase of the clock circuit first on the basis of the indexing bits received at the input of the delay line and then on the basis of the digital message bits supplied by the output of the delay line.

4,263,673

RECEIVE BUFFER FOR CONVERTING SYNCHRONOUS-TO-ASYNCHRONOUS DATA

John A. C. Bingham, Palo Alto, and Xuong K. Dang, Sunnyvale, both of Calif., assignors to Racal-Vadic, Inc., Sunnyvale, Calif.

Filed Feb. 8, 1979, Ser. No. 10,374
Int. Cl.[3] H04L 7/00
U.S. Cl. 375—117 **16 Claims**



1. In a digital data transmission system, including a transmit buffer for converting asynchronous data at an inprecise rate to synchronous data at a constant transmit bit rate adding or removing stop bits, a synchronous data transmission system, and a receive buffer for converting the synchronous to asynchronous data for use at a terminal in which each character has a start bit, a plurality of character identification bits and at least one stop bit, the improvement in a receive buffer comprising:

means for examining the stream of incoming synchronous data bits and for detecting the absence of a stop bit at the end of a character; and

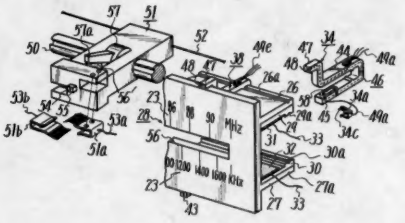
means for adding a stop bit, having the same width as a character identification bit, at the end of each such detected character.

4,263,674

MULTI-BAND VOLTAGE VARIABLE CAPACITANCE TUNER HAVING AUTOMATIC AND MANUAL TUNING OPERATIONS

Kokichi Morii, Chigasaki; Hajime Shichijo, Fujisawa, and Kohei Haneishi, Tokyo, all of Japan, assignors to Sony Corporation and Alps Electric Co., Ltd., both of Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,375
Claims priority, application Japan, Nov. 25, 1978, 53-145516
Int. Cl.[3] H04B 1/26; H03J 3/18, 5/32
U.S. Cl. 455—175 **10 Claims**



6. A tuning apparatus comprising:

a dial plate marked with broadcast frequencies thereon;

a substrate having a resistive layer thereon, said resistive layer having varying resistance valves distributed thereabout which correspond to said broadcast frequencies on said dial plate, said resistive layer also being supplied with a DC voltage at opposite ends thereof;

a plurality of marker means slidably disposed with respect to said dial plate to indicate a predetermined broadcast frequency, each having a first electrically conductive slide element for slidably contacting said resistive layer to detect one of a plurality of predetermined DC voltages in response to the location of said marker means;

mounting means slidably disposed in parallel with said dial plate, including a display member extending toward said dial plate to indicate a manually selected broadcast frequency, and a second electrically conductive slide element for slidably contacting said resistive layer to detect a predetermined DC voltage in response to the location of said mounting means; and

switching means supplied with at least one of said predetermined DC voltages from said first and second slide elements and selectively supplying one of said predetermined DC voltages to a turning circuit as a tuning control voltage.

4,263,675

AFT CIRCUIT

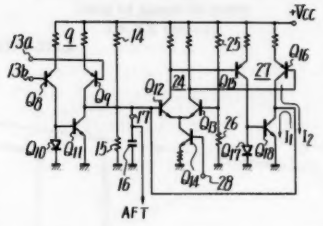
Masayuki Hongu, Kawasaki; Shigeru Ohmuro, Higashimine, and Masaharu Tokuhara, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,852
Claims priority, application Japan, Nov. 2, 1978, 53-135486
Int. Cl.[3] H04B 1/16
U.S. Cl. 455—192 **8 Claims**

1. In an automatic fine tuning circuit of the type in which a frequency discriminated intermediate frequency signal is supplied to a capacitive element and a voltage across said capacitive element is supplied to a variable reactance element of a tuner as an AFT voltage, the improvement comprising:

comparator means for comparing the AFT voltage across said capacitive element with a reference voltage;

first switching means controlled by said comparator means for forming a charge path for said capacitive element during a channel selection operation when said AFT voltage is less than said reference voltage; and



second switching means controlled by said comparator means for forming a discharge path for said capacitive element during said channel selection operation when said AFT voltage is greater than said reference voltage.

4,263,676

RF AMPLIFYING SYSTEM HAVING IMAGE REJECTION

Craig A. Liebel, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 23, 1979, Ser. No. 60,091

Int. Cl.[3] **H04B** *1/12, 1/16*

U.S. Cl. 455—285 **3 Claims**

1. An improved RF input amplifier system comprising:

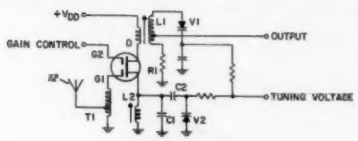
an antenna for receiving RF signals in a predetermined frequency band;

amplifying circuit means including at least a first, second and third electrodes;

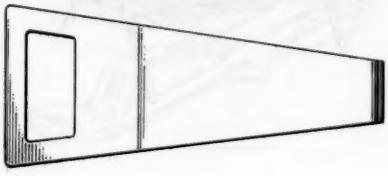
circuit means coupling said antenna to said first electrode;

first tank circuit means coupled to the second electrode, said first tank circuit means including a first voltage variable capacitor, said first tank circuit means selectively tunable to a predetermined desired reception frequency within the predetermined frequency band by applying a tuning voltage bias of a predetermined magnitude to said first voltage variable capacitor; and

second tank circuit means coupled to the third electrode of the amplifying circuit means, said second tank circuit means including a second voltage variable capacitor, said second tank circuit means selectively tunable to a predetermined image frequency associated with the predetermined desired reception frequency by applying a tuning voltage bias of similar predetermined magnitude to the second voltage variable capacitor such that the second tank circuit means is tuned to the predetermined image frequency associated with the predetermined desired reception frequency at the same time that the first tank circuit means is tuned to the predetermined desired reception frequency and such that upon receipt of a signal containing both the desired reception and the image frequencies, the current flowing from the second electrode is reduced to cause voltage output in the first tank circuit means to be reduced during the presence of the image frequency.



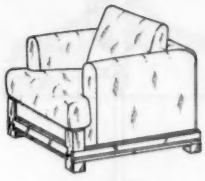
258,920
BOOT BUCKLING AID
Carl A. White, 41 Woodland Dr., Fargo, N. Dak. 58102
Filed Feb. 7, 1979, Ser. No. 10,479
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.2



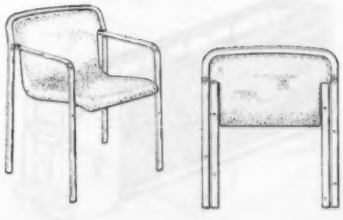
258,921
KEY-RING
Attilio Brentini, "Le Chateau", Crissier, Vaud, Switzerland (CH-1023)
Filed Jun. 23, 1977, Ser. No. 809,476
Claims priority, application Switzerland, May 18, 1977, 65 068
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61

258,922
HAIRBRUSH
Sol Natman, Great Neck, and Philip A. Thomas, Baldwin, both of N.Y., assignors to Stance Industries, Inc., Hauppauge, N.Y.
Filed Feb. 22, 1979, Ser. No. 14,112
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35

258,923
SEAT
Samuel T. Collins, Bassett, Va., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed May 25, 1978, Ser. No. 909,423
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

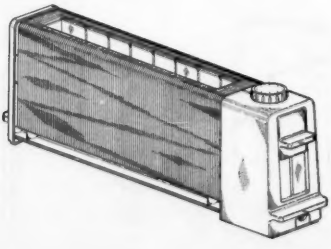


258,924
CHAIR OR SIMILAR ARTICLE
Robert L. Deschamps, Bartlett, Ill., and Kenneth C. Schory, Centerville, Ohio, assignors to Burd inc., Bannockburn, Ill.
Filed Jul. 25, 1978, Ser. No. 928,017
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

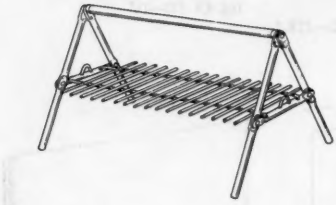


258,925
GOBLET OR SIMILAR ARTICLE
Alain D. Perrin, Rueil Malmaison, France, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Feb. 23, 1979, Ser. No. 14,758
Claims priority, application Switzerland, Aug. 29, 1978, 67448
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—13

258,926
TOASTER
Harry Hentschel, Munich, Fed. Rep. of Germany, assignor to Bosch Siemens Hausgeräte GmbH, Munich, Fed. Rep. of Germany
Filed Aug. 7, 1978, Ser. No. 931,825
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 4781
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—93

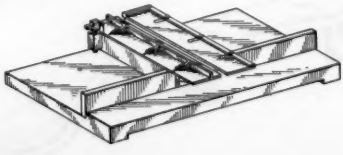


258,927
PORTABLE GRILL
Ronald Lee, 4606 Neal Rd., Apt. 165, Reno, Nev. 89502
Filed Oct. 31, 1979, Ser. No. 89,877
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107

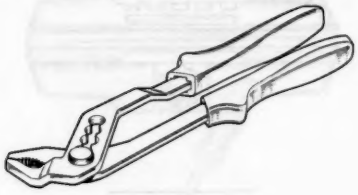


258,928
COLLAPSIBLE RACK
Renate Buchsteiner nee Fetzer, Gingen, Fils, Fed. Rep. of Germany, assignor to Johannes Buchsteiner GmbH & Co KG, Gingen, Fils, Fed. Rep. of Germany
Filed May 2, 1978, Ser. No. 902,268
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 7737937
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—188

258,929
ELECTRIC SAW GUIDE
John G. Raer, Jr., 268 Kensington Ave., Bayport, N.Y. 11705
Filed Aug. 10, 1978, Ser. No. 932,678
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



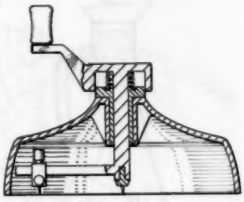
258,930
WATER PUMP PLIERS
Ulf H. Wahlberg, Enköping, Sweden, assignor to Aktiebolaget Bahco Verktyg, Enköping, Sweden
Filed Sep. 29, 1977, Ser. No. 837,946
Claims priority, application Sweden, May 2, 1977, 770987
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—22



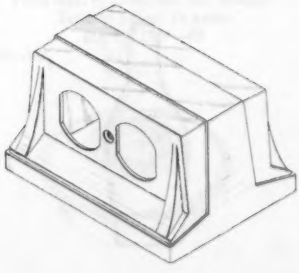
258,931
REVERSIBLE SCISSORS
Richard N. Hawkins, Rose Cottage, Preston, Woodleigh, Kingsbridge, Devon, England
Filed Jun. 9, 1978, Ser. No. 914,224
Claims priority, application United Kingdom, Dec. 22, 1977, 982704/77
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—57

258,932
GRAPHIC ARTS BLADE
Walter B. Graham, 1010 S. 91st St., Omaha, Nebr. 68114
Filed May 3, 1978, Ser. No. 902,782
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—98

258,933
PAPER CUTTER
Yuzo Takahashi, 32-19, Daizawa 2-chome, Setagaya-ku, Tokyo, Japan (155)
Filed Jul. 14, 1978, Ser. No. 924,908
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



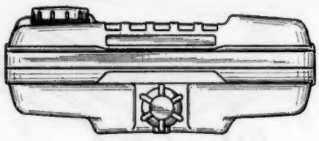
258,934
FLOOR OUTLET HOUSING
Thomas J. Sotolongo, Clearwater Beach, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 26, 1979, Ser. No. 61,083
Term of patent 14 years
Int. Cl. D8—*09*; D13—*03*
U.S. Cl. D8—353



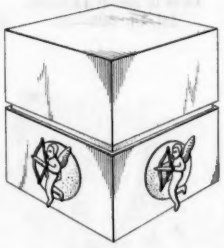
258,935
COMBINED BOTTLE AND STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 21, 1979, Ser. No. 22,587
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—374

258,936
BOTTLE OR SIMILAR ARTICLE
Thomas H. Hayes, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Apr. 30, 1979, Ser. No. 34,622
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—383

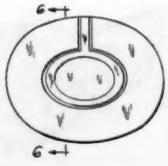
258,937
CONTAINER FOR LIQUIDS
Max R. Kneer, Holcomb, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Jul. 7, 1978, Ser. No. 923,044
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—376



258,938
PACKAGING CONTAINER FOR A NOVELTY SCROLL
Mary R. Spitzer, Rt. 1, Box 3, Cathlamet, Wash. 98612
Filed May 15, 1978, Ser. No. 905,660
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—311



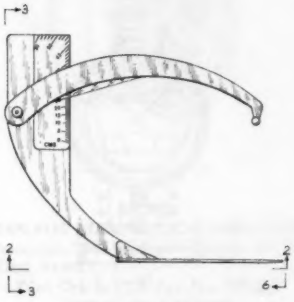
258,939
BOX
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,469
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424



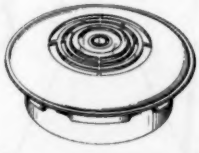
258,940
HAND HELD SOIL PROBE FOR DETECTING SOLID OBJECTS
Lowell F. Zelinski, 13362 Reliance St., Arleta, Calif. 91331
Filed Feb. 2, 1978, Ser. No. 867,957
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

258,941
COMBINED THERMOMETER AND HOLDER FOR A CALENDER, NOTE PAPER AND WRITING INSTRUMENTS
Walter Henkels, Holunderweg 1, 5142 HUM./u/ ckelhoven, Fed. Rep. of Germany
Filed Sep. 1, 1978, Ser. No. 938,935
Claims priority, application Fed. Rep. of Germany, May 20, 1978, 113
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—53

258,942
BODY CALIPER
Morris Simon, 8 Otis Pl., Beacon Hill, Boston, Mass. 02108
Filed Feb. 21, 1979, Ser. No. 13,052
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73

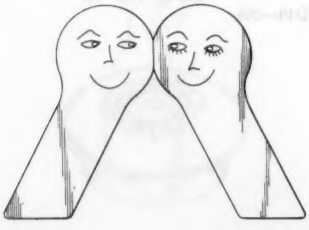


258,943
SMOKE DETECTOR
William W. Ng, Pasadena, Calif., assignor to Electronic Security Systems, Inc., Houston, Tex.
Filed Apr. 4, 1978, Ser. No. 893,486
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

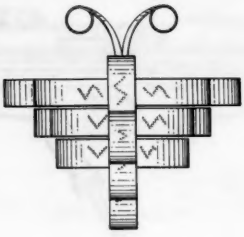


258,944
TROPHY
Alfredo A. Valdez, 16017 Maidstone Ave., Norwalk, Calif. 90650
Filed Aug. 16, 1978, Ser. No. 934,178
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

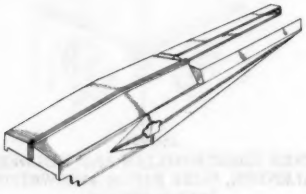
258,945
SCULPTURE
Rocco M. Gabriella, 38 Tipton La., Willingboro, N.J. 08046
Filed Aug. 25, 1978, Ser. No. 874,927
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—161



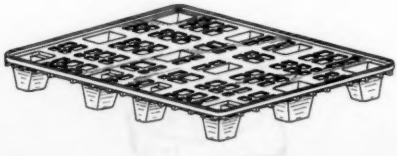
258,946
BUTTERFLY BOW PACKAGE DECORATION
Elaine V. Del Grosso, 318 Greenway Dr., Pittsburgh, Pa. 15235
Filed May 15, 1978, Ser. No. 906,144
Term of patent 14 years
Int. Cl. D5—*04;* D11—*05*
U.S. Cl. D11—184



258,947
COVER FOR WRECKER BOOMS
Harold F. Carr, Jr., 814 Fox Chase La., Hixson, Tenn. 37343, and David F. Humphries, P.O. Box 871, Lafayette, Ga. 30728, assignors to Dover Corporation, Chattanooga, Tenn.
Filed Jun. 26, 1978, Ser. No. 918,932
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—14

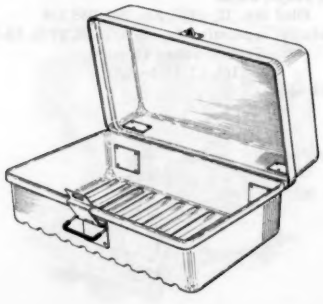


258,948
PALLET
Ray H. Stump, Jr., 9522 Poinsetta Dr., Shreveport, La. 71118
Filed Apr. 30, 1979, Ser. No. 34,469
Term of patent 14 years
Int. Cl. D9—*08*
U.S. Cl. D12—53

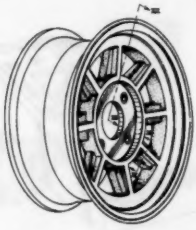


258,949
TRAVEL TRAILER
Howard White, 3908 Cherry St., Mound, Minn. 55364
Filed Oct. 2, 1978, Ser. No. 947,712
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103

258,950
CAR-TOP TRUNK
Arthur R. Wright, Coogee, Australia, assignor to Roto-Moulded Plastics Pty. Limited, Kogarah, Australia
Filed Jun. 21, 1978, Ser. No. 917,704
Claims priority, application Australia, Dec. 23, 1977, 73638/77
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



258,951
WHEEL FOR AUTOMOBILES
Masakazu Hayashi, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Hayashi Racing, Osaka, Japan
Filed Jun. 29, 1978, Ser. No. 920,245
Claims priority, application Japan, Dec. 29, 1977, 52-52352
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



258,952
FAN FOR AUTOMATIC GENERATOR
James E. Takayama, 7842 Coldwater Canyon Ave., North Hollywood, Calif. 91605
Filed Oct. 4, 1977, Ser. No. 839,267
Term of patent 14 years
Int. Cl. D13—*1*; D23—*04*
U.S. Cl. D13—1

258,953
SOLENOID COVER
John Mac, Sterling Heights, Mich., assignor to Ross Operating Valve Company, Detroit, Mich.
Filed Dec. 4, 1978, Ser. No. 965,732
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D13—1

258,954

CURSOR CONTROL FOR A DISPLAY SYSTEM

Nicholas M. Leon, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

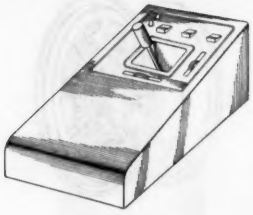
Filed Aug. 15, 1978, Ser. No. 933,710

Claims priority, application United Kingdom, Feb. 28, 1978, 983530/78

Term of patent 14 years

Int. Cl. D13—*03;* D14—*02*

U.S. Cl. D13—12



258,955

MAGNETIC CASSETTE DUPLICATOR

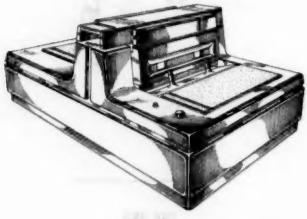
Matsuda Hari, Evanston, Ill., assignor to Pentagon Industries, Inc., Chicago, Ill.

Filed Oct. 2, 1978, Ser. No. 947,711

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—6



258,956

PORTABLE DATA ENTRY TERMINAL

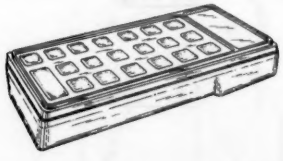
George E. Chadima, Jr., Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Mar. 19, 1979, Ser. No. 21,344

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—42



258,957

KEYBOARD HOUSING

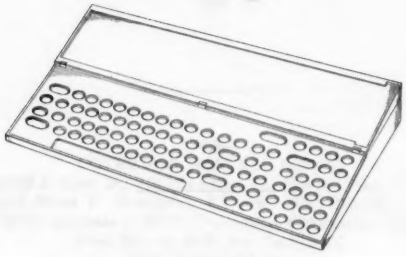
Ernest M. Bevilacqua, Wilton; Gordon P. Bruce, New Milford; David C. Danielson, Rowayton, all of Conn.; Daniel J. Formosa, Fort Lee, N.J.; Allen D. Hawthorne, New Canaan, Conn.; Eliot F. Noyes deceased, late of New Canaan, Conn. (by Mary D. Noyes, executrix); by Peter C. Holcombe, Milton, Mass. (for New England Merchants National Bank, executor); Kurt Roehrs, Clintondale, N.Y., and Paul F. Siegel, Norwalk, Conn., assignors to Discovision Associates, Costa Mesa, Calif.

Filed May 22, 1978, Ser. No. 908,595

Term of patent 14 years

Int. Cl. D14—*02*

U.S. Cl. D14—45



258,958

TELEPHONE SET

Hisao Fukushima; Yoshinori Kanda; Michio Ito, and Norimi Koiwa, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

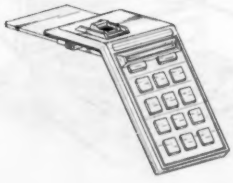
Filed Sep. 22, 1978, Ser. No. 945,536

Claims priority, application Japan, Apr. 28, 1978, 53-16820

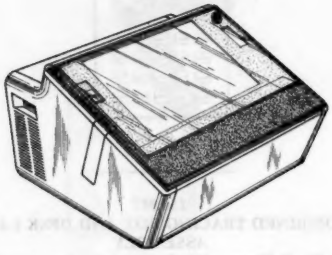
Term of patent 14 years

Int. Cl. D14—*03*

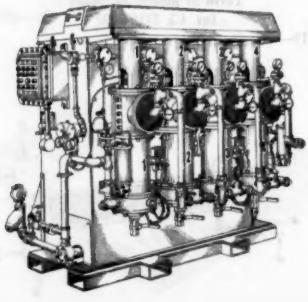
U.S. Cl. D14—53



258,959
PRINTER
Richard G. Clayton, Detroit; Jerry J. Sims; Thomas W. Crump, both of Southfield, and Richard E. Carell, Plymouth, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Jul. 28, 1978, Ser. No. 929,212
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—50

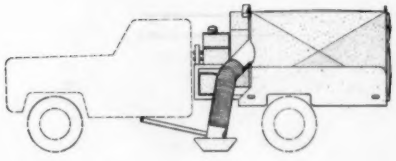


258,960
SANDMILL
John J. Corrigan, Garden Grove, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.
Filed Aug. 17, 1977, Ser. No. 825,128
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—123



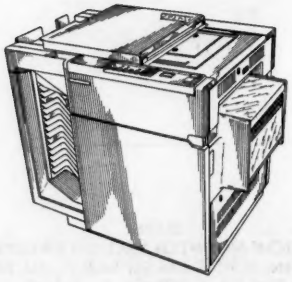
258,961
MANIFOLD FOR MAGNETIC DRIVE PUMP
Thomas B. Martin, Walnut Creek, Calif., assignor to Micropump Corporation, Concord, Calif.
Filed Dec. 11, 1978, Ser. No. 968,701
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

258,962
VEHICLE MOUNTED VACUUM SWEEPER
Jimmy W. Tate, 22 W. Watson St., Anniston, Ala. 36201
Filed Feb. 6, 1978, Ser. No. 875,627
Term of patent 14 years
Int. Cl. D15—*05, 05*
U.S. Cl. D15—48



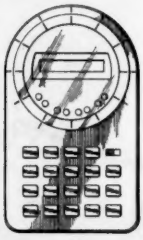
258,963
CARPET EXTRACTOR SOLUTION AND RECOVERY APPARATUS
Paul E. Phillips, Whitehall, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.
Filed Apr. 19, 1979, Ser. No. 31,419
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—49

258,964
ELECTROPHOTOGRAPHIC APPARATUS
Stephen K. Bright, Fairport, and Robert H. Van Valkinburgh, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 25, 1978, Ser. No. 945,937
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30

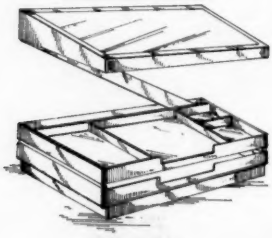


258,965
SOUND INSULATING COVER FOR A TYPEWRITER, TELETYPE OR THE LIKE
Berndt E. Frick, Herrgardsvägen 9, 135 00 Tyresö, Sweden
Filed Jul. 10, 1978, Ser. No. 926,941
Claims priority, application Sweden, Jan. 11, 1978, 780057
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1

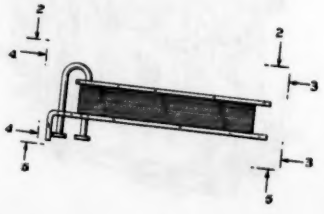
258,966
ASTROLOGICAL COMPUTER
Ian S. McCrae, Atlanta, Ga., assignor to Kosmos International Ltd., Nassau, The Bahamas
Filed Jan. 19, 1979, Ser. No. 4,739
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



258,967
COMBINED TRACING BOX AND DESK LAMP ASSEMBLY
William W. Rollinson, 613 Gayley Ave., Los Angeles, Calif. 90024
Filed Feb. 2, 1979, Ser. No. 8,549
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—36



258,968
DIRECTORY
Herbert Adler, Great Neck, N.Y., assignor to Crest Industries Corp., Deer Park, N.Y.
Filed Mar. 7, 1979, Ser. No. 18,442
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

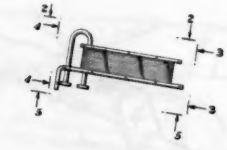


258,969

DIRECTORY

Herbert Adler, Great Neck, N.Y., assignor to Crest Industries Corp., Deer Park, N.Y.

Filed Mar. 7, 1979, Ser. No. 18,443
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

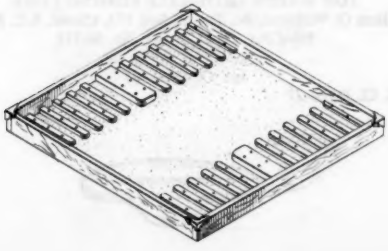


258,970

BACKGAMMON BOARD

Alfred P. Samuels, Jr., 2211 Forister Ct., Norman, Okla. 73069

Filed Mar. 15, 1979, Ser. No. 22,026
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—17

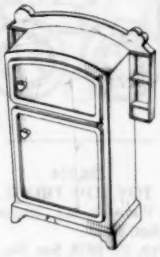


258,971

TOY REFRIGERATOR

Henry Orenstein; George Decker, both of Union, N.J.; Floyd E. Schlau, East Greenwich, R.I.; Peter M. Santaw, Batavia, Ohio, and Steven R. D'Aguanno, Greenville, R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed May 8, 1978, Ser. No. 905,096
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122

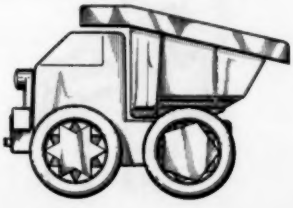


258,972

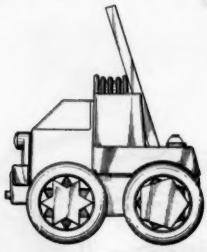
TOY DUMP TRUCK

Donald H. Samuels, Warwick, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.

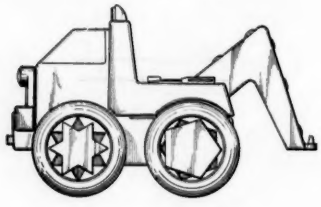
Filed Feb. 21, 1979, Ser. No. 13,794
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



258,973
TOY FIRE TRUCK
Donald H. Samuels, Warwick, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Feb. 21, 1979, Ser. No. 13,795
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—133

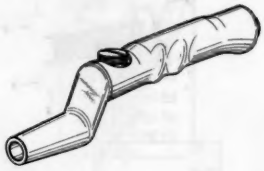


258,974
TOY TOW TRUCK
Donald H. Samuels, Warwick, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Feb. 21, 1979, Ser. No. 13,793
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—139



258,975
EXERCISE BENCH
William F. Irvine, 983 Rangeview Rd., Mississauga, Ontario, Canada (L5E 1H2)
Filed May 1, 1979, Ser. No. 34,990
Claims priority, application Canada, Nov. 8, 1978, 0811789
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

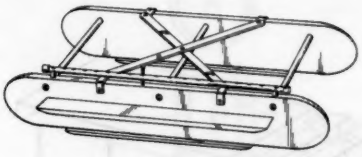
258,976
FISHING ROD GRIP
Yasomatsu Morishita, Kure, Japan, assignor to Ryobi Ltd., Fuchu, Japan
Filed Jan. 22, 1979, Ser. No. 5,107
Claims priority, application Japan, Oct. 10, 1978, 53-43140[U]
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



258,977
FISHING ROD GRIP
Masakazu Sakamoto, and Tetsuyuki Doi, both of Fukuyama, Japan, assignors to Ryobi Ltd., Fuchu, Japan
Filed May 31, 1979, Ser. No. 44,138
Claims priority, application Japan, Dec. 12, 1978, 53-52656[U]
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

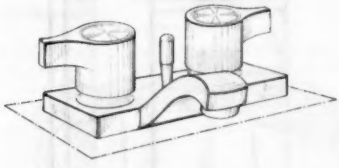
258,978
TOP WATER ARTIFICIAL FISHING LURE
William O. Williams, Jr., Rte. 2, Box 172, Clover, S.C. 29710
Filed Jul. 11, 1979, Ser. No. 56,711
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

258,979
FISHING FLOAT
Gino Scola, P.O. Box 608, Germiston. 1400, South Africa
Filed Mar. 28, 1978, Ser. No. 891,161
Claims priority, application South Africa, Nov. 16, 1977, 1757
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

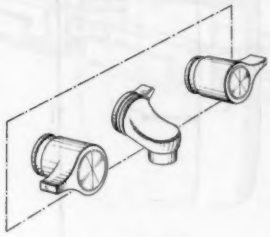


258,980
Patent Not Issued For This Number

258,981
FAUCET OR SIMILAR ARTICLE
Dominic A. Saporito, Fanwood, and Donald M. Genaro, Haworth, both of N.J., assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 761,157, Jan. 21, 1977. This application Jul. 18, 1979, Ser. No. 58,634
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



258,982
BATHTUB FAUCET UNIT
Dominic A. Saporito, Fanwood, and Donald M. Genaro, Haworth, both of N.J., assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 761,157, Jan. 21, 1977. This application Jul. 18, 1979, Ser. No. 58,633
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—26



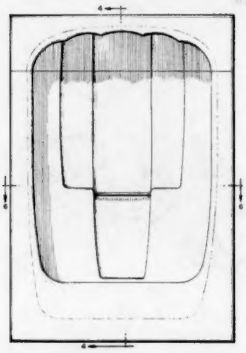
258,983
ELBOW FITTING
Bernard J. Gallagher, Mayfield; Erling G. Wennerstrom; Mark R. Houdek, both of Cleveland, and Laszlo Aliczky, Solon, all of Ohio, assignors to Cajon Co., Solon, Ohio
Filed Mar. 26, 1979, Ser. No. 23,825
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

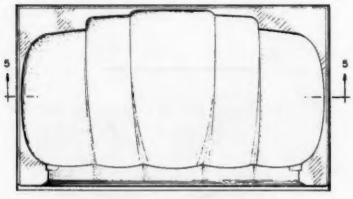
258,984

COMBINED BATHTUB AND SHOWER ENCLOSURE

John Vanderhoef, Winnipeg, Canada, assignor to Perma Glass Industries Ltd., Estevan, Canada

Filed Sep. 24, 1979, Ser. No. 78,151
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



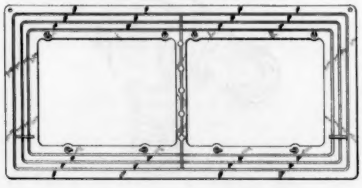


258,985

VENTILATOR SECTION

Elwin E. Peirce, 3890 Monroe Ave. NE., and Arthur L. Waltz, 4415 - 75th Ave. SE., both of Salem, Oreg. 97301

Filed Dec. 4, 1978, Ser. No. 966,148
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

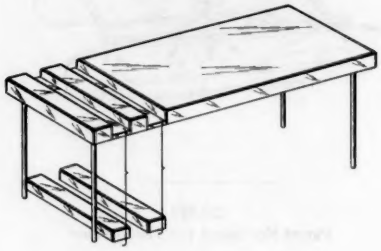


258,986

TABLE FOR EXAMINATION AND THERAPEUTIC USE

Peter Byrum, 173 S. Nardo, Solana Beach, Calif. 92075

Filed May 30, 1978, Ser. No. 910,582
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—3

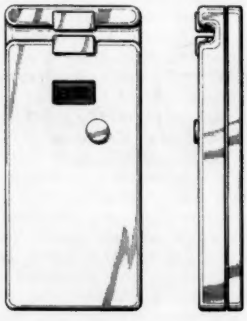


258,987

MEDICAL ELECTRICAL EQUIPMENT CASE

George H. Fathauer, Mesa, Ariz., and Gregory P. Henry, Cedar, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

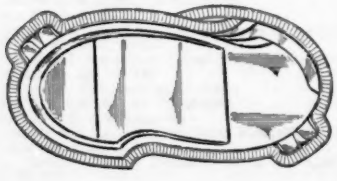
Filed Mar. 10, 1978, Ser. No. 886,330
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8



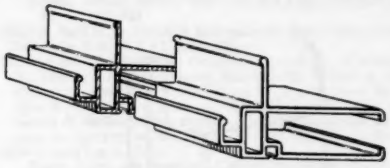
258,988
DENTAL ROOT-CANAL BROACH HANDLE
Henri Leonard, Besancon, France, assignor to Micro-Mega S,A,, Besancon, France
Filed Aug. 1, 1978, Ser. No. 930,032
Claims priority, application France, Apr. 10, 1978, 78 1177
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

258,989
Patent Not Issued For This Number

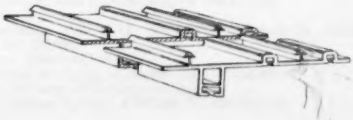
258,990
SWIMMING POOL
Herbert W. Allard, P.O. Box 601, Magnolia, Tex. 77355
Filed May 5, 1980, Ser. No. 146,631
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—2



258,991
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Sep. 14, 1978, Ser. No. 942,389
Claims priority, application Canada, Mar. 7, 1978, 1703785
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



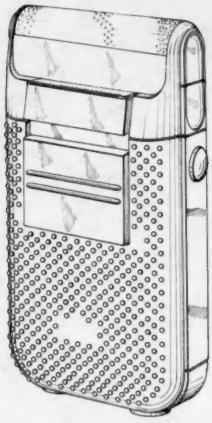
258,992
WINDOW COMPONENT EXTRUSION
Raymond Dallaire, P.O. Box 220, Levis, Quebec, Canada
Filed Sep. 14, 1978, Ser. No. 942,390
Claims priority, application Canada, Mar. 17, 1978, 1703783
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



258,993
DRYSHAVER

Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

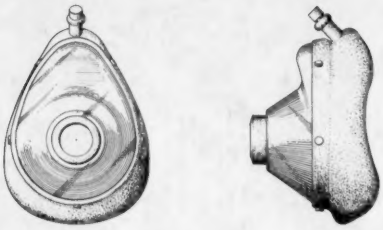
Filed Apr. 4, 1979, Ser. No. 26,825
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 73 MR 8740
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—49



258,994
BREATHING MASK

Christian Grane, Bronsholmsdalsvej 47, 2980 Kokkedal, Denmark

Filed Jul. 5, 1978, Ser. No. 922,153
Claims priority, application Sweden, Mar. 17, 1978, 780753
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D29—8



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF APRIL, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Antunes & Co.: *See—*
Miller, Dye O.; and Godsen, Ronald, 4,262,586, Cl. 99-345.000.

A/S Norcem: *See—*
Melbye, Arnulf, 4,262,462, Cl. 52-98.000.

A. Stotz Aktiengesellschaft: *See—*
Wetzel, Friedrich, 4,262,731, Cl. 164-19.000.

AB Industrifirman Skandia: *See—*
Andersson, Jan, 4,262,535, Cl. 73-428.000.

Abbott Laboratories: *See—*
Tadanier, John S.; and Martin, Jerry R., 4,263,429, Cl. 536-17.00R.

Abe, Shigeya: *See—*
Torii, Shinro; Tanaka, Toshio; Sasaki, Kouichi; Kato, Tsuneo; and Abe, Shigeya, 4,262,647, Cl. 123-651.000.

Accent Industries: *See—*
Prenger, Vivian L., 4,262,873, Cl. 248-318.000.

Acco Industries Inc.: *See—*
Carney, Edward J.; Mediratta, Harbans L.; and Heximer, Donald G., 4,262,600, Cl. 104-172.0BT.

ACF Industries, Incorporated: *See—*
Bialkowski, Ludwik S., 4,262,688, Cl. 137-242.000.
Binegar, Scott W., 4,262,690, Cl. 137-246.130.
Kacal, Gary W., 4,262,691, Cl. 137-315.000.

Adams, Ladd M., to Entek Corporation. Spray foam insulation gun. 4,263,166, Cl. 252-359.00E.

Adelman, Herbert B., to Crowell Corporation, The. Coated paper-microfoam sheet packaging material. 4,263,360, Cl. 428-238.000.

Adkins, James C.: *See—*
Rosenblatt, Aaron A.; and Mann, Walter J., 4,262,529, Cl. 73-146.800.

Affa, Alfred, to Dr. Johannes Heidenhain GmbH. Error correction apparatus for a length-measuring instrument and method for generating an error correction profile. 4,262,423, Cl. 33-125.00A.

Agence Nationale de Valorisation de la Recherche: *See—*
Courrege, Philippe; Deflandre, Jean; and Valette, Francois, 4,262,735, Cl. 165-4.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Durand, Lucien; and Aubert, Georges, 4,262,388, Cl. 17-52.000.

AGFA-Gevaert AG: *See—*
Klotzer, Sieghart; Moisar, Erik; and von Rintelen, Harald, 4,263,396, Cl. 430-409.000.
Stemme, Otto; Lermann, Peter; Stenzenberger, Volkmar; Went, Werner; Herzig, Eberhard; and Hoesch, Friedrich-Ludolph, 4,263,000, Cl. 355-27.000.

AGFA-GEVAERT N.V.: *See—*
Delzenne, Gerard A.; and Kokelenberg, Hendrik E., 4,263,395, Cl. 430-332.000.

Ahlen, Karl G.; and Ketola, Rainer B., to S.R.M. Hydromekanik Aktiebolag. Hydraulic valve system for controlling particularly a vehicle gearbox. 4,262,554, Cl. 74-677.000.

Ahr, Dieter, to Siemens Aktiengesellschaft. Conveyor system with a maintenance station. 4,262,599, Cl. 104-88.000.

Ainsworth, Leonard Hastings: *See—*
Heywood, Joseph R., 4,262,906, Cl. 273-143.00R.

Aiphone Co., Ltd.: *See—*
Hisatsune, Yoshinobu; and Suzuki, Masaharu, 4,263,484, Cl. 179-111.00E.

Aitken, William K.: *See—*
Lucas, John C.; and Aitken, William K., 4,262,845, Cl. 238-7.000.

Akimoto, Hiroshi: *See—*
Miyashita, Osamu; and Akimoto, Hiroshi, 4,263,294, Cl. 424-248.540.

Aktiebolaget Astra: *See—*
Appelgren, Curt H.; Bogentoft, Conny B.; and Sjogren, John A., 4,263,273, Cl. 424-21.000.

Aktiebolaget Hagglund & Soner: *See—*
Falk, Alfons B., 4,262,972, Cl. 305-35.00R.

Aktiebolaget Hassie: *See—*
Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., 4,263,323, Cl. 424-324.000.
Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., 4,263,325, Cl. 424-330.000.

A.G. fur industrielle Elektronik AGIE: *See—*
Kilcher, Beat, 4,263,493, Cl. 219-69.00W.

Aktieselskabet For Kontor Kemi: *See—*
Andersen, John V.; and Dessauer, Guido, 4,262,935, Cl. 282-27.500.

Akzona Incorporated: *See—*
Allen, Thomas C.; and Denning, David B., 4,263,244, Cl. 264-168.000.

Albany International Corp.: *See—*
Funkhouser, William A., 4,262,846, Cl. 239-1.000.

Albarda, Scato: *See—*
Heim, Ulrich; and Albarda, Scato, 4,262,686, Cl. 137-7.000.

Alberts, Heinrich: *See—*
Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, 4,263,418, Cl. 525-277.000.

Aldrich, Paul H., to Hercules Incorporated. Stable dispersions of fortified rosin. 4,263,182, Cl. 260-9.000.

Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A. Method for production of fibrous sheet material and apparatus for carrying out the same. 4,263,241, Cl. 264-121.000.

Alfa Romeo S.p.A.: *See—*
Russo, Luigi; and Spaggiari, Luciano, 4,262,524, Cl. 73-35.000.

Allen-Bradley Company: *See—*
Merrell, Gregory L.; and Bernhard, Theodore L., 4,263,647, Cl. 364-101.000.

Allen, George A.: *See—*
Brendle, Ralph N.; Miley, John W.; and Allen, George A., 4,263,009, Cl. 8-495.000.

Allen, Robert J.; and Hahn, Kurt L., to American Can Company. Support pedestals. 4,262,510, Cl. 72-12.000.

Allen, Thomas C.; and Denning, David B., to Akzona Incorporated. Process for spinning regenerated cellulose fibers containing an alloying polymer. 4,263,244, Cl. 264-168.000.

Allied Chemical Corporation: *See—*
Fox, William R., 4,262,933, Cl. 280-802.000.
Morris, Robert C.; and O'Dell, E. Wayne, 4,262,497, Cl. 63-32.000.

Allied Steel & Tractor Products, Inc.: *See—*
Bouplon, Edward J., 4,262,966, Cl. 299-39.000.

Allier, Michel; and Lursat, Didier, to Societe Nationale Industrielle Aerospatiale. Overhead attack missile. 4,262,596, Cl. 102-56.0SC.

Allinson, Francis W. Penile support. 4,262,662, Cl. 128-79.000.

Allinson, Francis W. Penile support. 4,262,663, Cl. 128-79.000.

Allis-Chalmers Corporation: *See—*
James, Mark C., 4,262,679, Cl. 130-27.0JT.

Allison, Glenn L.; Winship, Thomas E.; and Justman, Daniel B., to Smith International, Inc. Reamer-stabilizer. 4,262,760, Cl. 175-347.000.

Allsop Automatic, Inc.: *See—*
Stern, Donald J., 4,263,502, Cl. 219-521.000.

Alps Electric Co., Ltd.: *See—*
Inoue, Akihiko, 4,262,504, Cl. 70-151.00R.
Morii, Kokichi; Shichijo, Hajime; and Haneishi, Kohei, 4,263,674, Cl. 455-175.000.

Alsthom-Atlantique: *See—*
Legrand, Bernard; and Masselin, Michel, 4,263,607, Cl. 357-79.000.

Althaler, Wilhelm F.: *See—*
Sigott, Siegfried; Schetine, Otto R.; Zitz, Alfred J.; and Althaler, Wilhelm F., 4,263,005, Cl. 405-303.000.

Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. 3-[2,4-(Disubstituted)-phenyl-]azacycloalkanones as analgesics. 4,263,438, Cl. 546-216.000.

Altman, Peter W., to Light & Sound Specialties, Inc. Lighting device. 4,263,640, Cl. 362-252.000.

Altman, Roger L.; and Rao, M. Vikram, to N. L. Industries, Inc. Technique for transforming soda matte slag sulfides into silicates. 4,263,042, Cl. 75-24.000.

Alvarez, Jorge G. Accessory for exercising on a bicycle. 4,262,899, Cl. 272-73.000.

American Can Company: *See—*
Allen, Robert J.; and Hahn, Kurt L., 4,262,510, Cl. 72-12.000.
Rentmeester, Kenneth R.; Eike, Eugene F.; Echternach, Gerald G.; and Stukas, Leo A., 4,263,338, Cl. 427-55.000.

American Crystal Sugar Company: *See—*
Bichsel, Stanley E.; Wang, Yueh; and Sandre, Andrew M., 4,263,052, Cl. 127-41.000.

American Cyanamid Company: *See—*
Nandagiri, Arun, 4,263,275, Cl. 424-47.000.
Tripathi, Uma P.; and Tomaszewicz, Diana K., 4,263,277, Cl. 424-72.000.
Zavisza, Daniel M., 4,263,190, Cl. 260-29.4UA.

American Fence Co., Inc.: *See—*
Simcoe, Lee A.; and Miller, Mathew C., 4,262,882, Cl. 256-22.000.

American Hospital Supply Corporation: *See—*
Kodet, Reuben P., 4,262,872, Cl. 248-311.300.

American Radionic Co., Inc.: *See—*
Stockman, Robert M.; and Sipovic, Joseph J., 4,263,638, Cl. 361-328.000.

American Standard Inc.: *See—*
Fabian, Wolfgang, 4,262,699, Cl. 137-801.000.

American Videonetics Corporation: *See—*
Yamanaka, Takeshi, 4,262,859, Cl. 242-192.000.

Amor, William H., Jr.: *See*—
Danko, Oliver L.; Steiss, William C.; Amor, William H., Jr.; Tobbe, William P.; Gardner, Thomas J.; and Shufflebarger, Earl D., 4,262,880, Cl. 251-288.000.

AMP Incorporated: *See*—
Cherian, Gabriel B.; Scheingold, William S.; and Kandybowski, Steven J., 4,262,986, Cl. 339-252.00R.
Tennant, Robert J., 4,263,474, Cl. 174-84.00C.

AMSTED Industries Incorporated: *See*—
Schuricht, Henry A.; and Scheffer, Kenneth F., 4,262,797, Cl. 198-756.000.

Andersen, John V.; and Dessauer, Guido, to Feldmuhle Aktiengesellschaft; and Aktieselskabet For Kontor Kemi. Donor material for carbonless copying and coating composition for the same. 4,262,935, Cl. 282-27.500.

Anderson, Brian, to Imperial Chemical Industries Limited. Reactive dyestuffs containing chlorine or fluorine substituents and one or more 1,3-dicyanobenzene radicals linked to the dyestuff at the 2-, 4- or 6-position. 4,263,206, Cl. 260-195.000.

Anderson, David G.: *See*—
Grover, Thomas B., Jr.; Wiebush, Le Moey; and Anderson, David G., 4,262,842, Cl. 235-92.00T.

Anderson, Joseph A. Microplate filler. 4,262,711, Cl. 141-238.000.

Anderson, Larry B.; Hamkins, Clark J.; Petrak, Harry A.; and Schaefer, David V., to Mechanex Corporation, The. Torque responsive hub clutch. 4,262,785, Cl. 192-35.000.

Anderson, Richard N., to V. E. Anderson Mfg. Co. Building structure. 4,262,450, Cl. 49-425.000.

Andersson, Jan, to AB Industrifirman Skandia. Apparatus for metering or distributing the volume of liquids. 4,262,535, Cl. 73-428.000.

Annis, Myron C., to Hooker Chemicals & Plastics Corp. Phenolic resins with improved low temperature processing stability. 4,263,248, Cl. 264-328.200.

Antonini, Piero: *See*—
White, Richard J.; Lancini, Giancarlo; and Antonini, Piero, 4,263,404, Cl. 435-253.000.

Anzenberger, Joseph F., to Stauffer Chemical Company. Rust-preventive compositions. 4,263,062, Cl. 148-6.15R.

Aoyama, Koji: *See*—
Kajihata, Munetoshi; and Aoyama, Koji, 4,263,520, Cl. 307-350.000.

Apparatebau Rothemuhle Brandt & Kritzler: *See*—
Brandt, Joachim; and Kantelhardt, Werner, 4,263,022, Cl. 55-112.000.

Appelgren, Curt H.; Bogentoft, Conny B.; and Sjogren, John A., to Aktiebolaget Astra. Pharmaceutical preparation comprising a cardiac glycoside with a polymer coating. 4,263,273, Cl. 424-21.000.

Apple, Martin A.; Hunt, C. Anthony; and Yanagisawa, Hiroaki, to University of California, The Regents of the. Bis-anthracycline nucleic acid function inhibitors and improved method for administering the same. 4,263,428, Cl. 536-17.00A.

Applications Industrielles du Diamant S.T.I. Triffus France: *See*—
Ferrand, Henri; and Echard, Alain, 4,262,650, Cl. 125-15.000.

Applied Fiberoptics: *See*—
Waters, George F., 4,262,989, Cl. 350-39.000.

Applied Power Inc.: *See*—
Mason, James H., 4,262,519, Cl. 72-457.000.

Arai, Shoji: *See*—
Saito, Toshihiro; Tsutsumi, Yukihiro; and Arai, Shoji, 4,263,449, Cl. 560-263.000.

Araki, Shigeyuki, to Ricoh Company, Ltd. Hammer drive apparatus for impact printer. 4,262,592, Cl. 101-93.030.

Aratani, Yoshio: *See*—
Otaki, Yukio; Mineo, Masatoshi; Nakagawa, Kiyoshi; Nishiumi, Shiro; and Aratani, Yoshio, 4,263,368, Cl. 428-373.000.

Arita, Setsuo: *See*—
Sato, Takao; and Arita, Setsuo, 4,263,580, Cl. 340-163.000.

Armco Inc.: *See*—
Kirkland, Kerry G., 4,262,748, Cl. 166-348.000.

Armstrong Cork Company: *See*—
Shenk, Jay D., 4,263,093, Cl. 162-109.000.

Armstrong, William J. Muffler clamp device. 4,262,943, Cl. 285-420.000.

Arnodo, Christian: *See*—
Nuzillat, Gerard; and Arnodo, Christian, 4,263,340, Cl. 427-84.000.

Arnold, Fred E.: *See*—
Reinhardt, Bruce A.; and Arnold, Fred E., 4,263,461, Cl. 568-636.000.

Arnold, Mary T.: *See*—
Sheng, Ming N.; and Arnold, Mary T., 4,263,465, Cl. 585-18.000.

Arnold, Werner; and Neubauer, Josef, to Diehl GmbH & Co. Method and arrangement for the generating and processing of electrical impulses. 4,263,590, Cl. 340-672.000.

Arnon, Ruth: *See*—
Sela, Michael; Arnon, Ruth; Hurvitz, Esther; Maron, Ruth; and Levy, Ron, 4,263,279, Cl. 424-85.000.

Arts et Techniques Nouvelles: *See*—
Augros, Jacques, 4,262,813, Cl. 215-12.00R.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, 4,263,439, Cl. 546-251.000.

Aschwanden, Felix, to RCA Corporation. Automatic deviation limit control circuit for secam encoders. 4,263,609, Cl. 358-14.000.

Ashcraft, Arnold C.; and Turbett, Robert J., to Union Carbide Corporation. Dielectric compositions stabilized against water treeing with organo silane compounds containing the azomethine group and partial condensation products. 4,263,158, Cl. 252-573.000.

Astle, Brian, to RCA Corporation. Amplitude limiter with automatic duty cycle control for use in a phase-locked loop. 4,263,565, Cl. 331-15.000.

Astle, Brian, to RCA Corporation. Voltage controlled oscillator. 4,263,567, Cl. 331-111.000.

Ateliers des Charmilles, S.A.: *See*—
Martin, Roland, 4,263,494, Cl. 219-69.00G.

Atkins, Kenneth E., to Union Carbide Corporation. Polyester molding compositions. 4,263,199, Cl. 260-40.00R.

Atlantic Richfield Company: *See*—
Chambers, Robert R., 4,262,373, Cl. 4-502.000.
Coffee, Robert D., 4,262,520, Cl. 73-1.00G.
Rausch, Maurice K.; Eickemeyer, Daniel B.; and Tollefsen, Gerald E., 4,263,127, Cl. 208-58.000.
Sheng, Ming N.; and Arnold, Mary T., 4,263,465, Cl. 585-18.000.

Aubert, Georges: *See*—
Durand, Lucien; and Aubert, Georges, 4,262,388, Cl. 17-52.000.

Augros, Jacques, to Arts et Techniques Nouvelles. Bottle closure. 4,262,813, Cl. 215-12.00R.

Augsburger, Walter, to Sulzer Brothers Limited. Method of starting a forced-flow steam generator. 4,262,636, Cl. 122-406.0ST.

Automobiles Peugeot: *See*—
Le Salver, Robert; and Poupard, Dominique, 4,262,886, Cl. 267-8.00R.

Avery International Corporation: *See*—
Rampelberg, Victor H., 4,263,077, Cl. 156-238.000.

Avery, John R. Container for fragile articles. 4,262,801, Cl. 206-522.000.

Avery, Roland M., Jr.: *See*—
Burgess, George M.; and Avery, Roland M., Jr., 4,263,365, Cl. 428-310.000.

Avril, Arthur C. Method of and apparatus for drying materials. 4,262,429, Cl. 34-33.000.

Aylward, John R.: *See*—
Frosch, Robert A.; and Aylward, John R., 4,263,112, Cl. 204-129.000.

B. F. Goodrich Company, The: *See*—
Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,263,075, Cl. 156-115.000.
Jones, Richard A.; and Witenhafer, Donald E., 4,263,421, Cl. 526-62.000.

B. Heller & Company: *See*—
Olson, Dennis G.; and Wistreich, Hugo E., 4,263,329, Cl. 426-310.000.

Babcock & Wilcox Company, The: *See*—
Downs, William; Pirsh, Edward A.; Stewart, Jack F.; and Strom, Stephen S., 4,263,021, Cl. 55-73.000.
Wiener, Murray, 4,262,637, Cl. 122-478.000.

Bacsanyi, Thomas J.: *See*—
Orem, Donald E.; Holmes, Vernon P.; Bacsanyi, Thomas J.; and Harmon, Edward J., 4,262,536, Cl. 73-462.000.

Bader, Robert F. Culture sampling device and method. 4,262,677, Cl. 128-759.000.

Bain, Leland S.; and Rudy, Thomas P., to United Technologies Corporation. Additive for reducing combustion instability in composite solid propellants. 4,263,071, Cl. 149-19.900.

Bains, William R., to United States of America, Army. Cartridge ejector. 4,262,578, Cl. 89-1.00K.

Bak, Eugene, to Mooney Chemicals, Inc. Polyurethane compositions and process for preparing polyurethane emitting reduced amounts of toxic fumes on burning using a cobalt, copper, nickel or manganese salt. 4,263,411, Cl. 521-108.000.

Baker, Charles C.: *See*—
Ohkawa, Tihiro; and Baker, Charles C., 4,263,096, Cl. 176-3.000.

Baker Perkins Holdings Limited: *See*—
Mayfield, Peter A., 4,262,709, Cl. 141-67.000.

Baldwin, Derek: *See*—
Gates, Peter S.; Baldwin, Derek; Wilson, Carol A.; and Gillon, John, 4,263,037, Cl. 71-88.000.

Baldwin, John J., to Merck & Co., Inc. N-Aralkyl containing cyanopyridines. 4,263,307, Cl. 424-263.000.

Ballatore, Daniel; Delaporte, Francois; Lebesnerais, Gerard; and Nuez, Jean-Paul, to International Business Machines Corporation. Arrangement for correcting the voltage coefficient of resistance of resistors integral with a semiconductor body. 4,263,518, Cl. 307-303.000.

Baltek Corporation: *See*—
Kohn, Jean, 4,262,717, Cl. 144-316.000.

Ban, Hiroshi: *See*—
Yamamoto, Yasunobu; Ban, Hiroshi; Nakavishi, Katumi; Tomikawa, Ryoichi; Nakanishi, Katumi; Tomikawa, Ryoichi; and Kato, Toshitake, 4,262,788, Cl. 192-107.00M.

Bank Computer Network Corporation: *See*—
Fish, Leonard A., 4,262,817, Cl. 221-130.000.

Bankes, Kristen E.; Herman, Carl H.; Johnson, Anderson F., Jr.; and Large, Donald M., to Western Electric Company, Inc. Distinguishing elongated articles according to their shape. 4,262,805, Cl. 209-656.000.

Bannenberg, Rudolfus J. C.: *See*—
Swinkels, Franciscus J. M.; Bannenberg, Rudolfus J. C.; and Schmitz, Johannes H. A., 4,263,164, Cl. 252-301.40R.

Banta, Maynard A. Apparatus and method for masking surfaces. 4,263,347, Cl. 427-282.000.

Banyash, Douglas C. Combination cigarette holder and lighter. 4,262,682, Cl. 131-185.000.

Barber-Colman Company: *See—*
Haug, Edward W., 4,262,456, Cl. 51-325.000.
Bargain, Michel; and Lefort, Marcel, to Rhone-Poulenc Industries. Polyethylene silicon compounds. 4,263,436, Cl. 546-14.000.
Barnett, Allan E.: *See—*
Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., 4,263,173, Cl. 252-452.000.
Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., 4,263,225, Cl. 564-422.000.
Barr & Stroud Limited: *See—*
Runciman, Herbert M., 4,263,515, Cl. 250-494.000.
Barrett, Robert B.: *See—*
Wilson, Clark M.; and Barrett, Robert B., 4,262,776, Cl. 184-15.00R.
Barry-Wehmiller Company: *See—*
Huling, James K., 4,263,254, Cl. 422-25.000.
Bartak, Gottlieb. Liquid for waterproofing a masonry structure. 4,263,161, Cl. 252-182.000.
Bartek, Robert: *See—*
Madgavkar, Ajay M.; and Bartek, Robert, 4,263,467, Cl. 585-525.000.
Bartelt, James T.: *See—*
Carlson, Scott W.; and Bartelt, James T., 4,263,548, Cl. 324-102.000.
Bartholic, David B., to Engelhard Minerals & Chemicals Corporation. Upgrading petroleum and residual fractions thereof. 4,263,128, Cl. 208-91.000.
Bartoli, Francesco: *See—*
Marconi, Walter; Bartoli, Francesco; Gulinelli, Silvio; Morisi, Franco; and Zaccardelli, Delio, 4,263,180, Cl. 260-8.000.
Barton, Stephen, to Zenith Radio Corporation. Automatic antenna positioning apparatus. 4,263,539, Cl. 318-664.000.
Bartsch, Adalbert: *See—*
Berndt, Gerhard; Bartsch, Adalbert; and Kolln, Olaf, 4,263,120, Cl. 204-273.000.
BASF Aktiengesellschaft: *See—*
Graser, Fritz; and Guenthert, Paul, 4,262,851, Cl. 241-16.000.
Hagen, Helmut; Thieme, Peter C.; and Franke, Albrecht, 4,263,430, Cl. 542-458.000.
Pauls, Mathias, 4,263,412, Cl. 521-114.000.
Schmidt, Wolfram; and Paust, Joachim, 4,263,454, Cl. 562-587.000.
BASF Wyandotte Corporation: *See—*
Login, Robert B.; and Dutton, Daniel R., 4,263,094, Cl. 162-164.00R.
Login, Robert B., 4,263,337, Cl. 427-54.100.
Login, Robert B., 4,263,370, Cl. 428-395.000.
Schmolka, Irving R., 4,263,179, Cl. 252-548.000.
Basham, Billy G. Portable scaffold. 4,262,773, Cl. 182-132.000.
Battard, Jean-Claude: *See—*
Waegaert, Pierre; and Battard, Jean-Claude, 4,262,681, Cl. 131-105.000.
Battigelli, Jean A.; and Bouquet, Francois, to Saint-Gobain Industries. Apparatus for heat treatment of fibrous mats. 4,263,007, Cl. 425-371.000.
Battisti, Ruggero: *See—*
Merlo, Fabrizio; Battisti, Ruggero; Bornengo, Giorgio; Mazzaferro, Nicola; Mangini, Angelo; and Tundo, Antonio, 4,263,204, Cl. 260-147.000.
Bauchert, Jens; and Brechner, Ernst, to Fritz Eichenauer, Firma. Electric tubular heating body and process for its manufacture. 4,263,577, Cl. 338-242.000.
Bauer, Adolf: *See—*
Weber, Karl H.; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,263,310, Cl. 424-269.000.
Bauer, Heinz; Gedig, Alfred; Frohnhaus, Reiner; Becker, Burckhard; Behrendt, Manfred; and Busch, Jurgen, to C. Rob. Hammerstein GmbH. Guide rail assembly for a vehicle seat. 4,262,963, Cl. 297-473.000.
Bauer, Kurt; Hagena, Detlef; and Muller, Hans-Otto, to Haarmann & Reimer GmbH. 3-Methyl-aldehydes, processes for their preparation and their use as odorants. 4,263,459, Cl. 568-448.000.
Bauguion, Laurent, to Les Cables de Lyon. Cable for digital transmission. 4,263,471, Cl. 174-34.000.
Bausch & Lomb Incorporated: *See—*
Hartstein, Jack, 4,262,370, Cl. 3-13.000.
Baxter Travenol Laboratories, Inc.: *See—*
Hrynewycz, Orest, 4,262,824, Cl. 222-450.000.
Kersten, Jean, 4,262,671, Cl. 128-272.300.
Schmidt, Bradley J., 4,262,668, Cl. 128-214.00R.
Bayer Aktiengesellschaft: *See—*
Buysch, Hans-Josef; Gruber, Hermann; Wellner, Wolfgang; and Leiritz, Karl, 4,263,162, Cl. 252-182.000.
Meyborg, Holger; Mormann, Werner; Grogler, Gerhard; and Schwindt, Jurgen, 4,263,408, Cl. 521-51.000.
Mohring, Edgar; Stadler, Peter; and Roessler, Peter, 4,263,296, Cl. 424-249.000.
Pilz, Volker; and Rupp, Roland, 4,263,253, Cl. 422-1.000.
Roos, Ernst; Jeblick, Werner; and Hurnik, Helmut, 4,263,165, Cl. 252-350.000.
Schwindt, Jurgen; Meyborg, Holger; Grogler, Gerhard; and Recker, Klaus, 4,263,423, Cl. 528-55.000.
Seng, Florin; Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, 4,263,435, Cl. 544-223.000.
Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, 4,263,418, Cl. 525-277.000.
Wagner, Kuno; and Findeisen, Kurt, 4,263,181, Cl. 260-9.000.
Bayer, Horst O.: *See—*
Ollinger, Janet; and Bayer, Horst O., 4,263,288, Cl. 424-210.000.
Bayerische Motoren Werke A.G.: *See—*
Bock, Kurt, 4,262,977, Cl. 308-26.000.
Baylor College of Medicine: *See—*
Melnick, Joseph L.; and Wallis, Craig, 4,263,405, Cl. 435-291.000.
BBC Brown, Boveri & Company Limited: *See—*
Buhler, Karl, 4,263,469, Cl. 13-10.000.
Beacom, Roger R. Concrete pipe lift hole plug. 4,262,701, Cl. 138-89.000.
Bean, Eric R., to Kimball International, Inc. Quasi-random phase shift system for an electronic musical instrument. 4,262,575, Cl. 84-1.240.
Beatty, Brent A., to General Electric Company. Missed commutation detector and safeguard arrangement. 4,263,646, Cl. 363-58.000.
Beaumont, Gregory J.: *See—*
Steinmetz, Richard J.; and Beaumont, Gregory J., 4,263,615, Cl. 358-148.000.
Beck, Ronald A., to Sperry Corporation. Epoxy resin gel tester. 4,262,521, Cl. 73-17.00R.
Becker, Burckhard: *See—*
Bauer, Heinz; Gedig, Alfred; Frohnhaus, Reiner; Becker, Burckhard; Behrendt, Manfred; and Busch, Jurgen, 4,262,963, Cl. 297-473.000.
Becker, Joseph T.; Doran, Byron L.; and Perretti, Patrick J. Game apparatus. 4,262,909, Cl. 273-323.000.
Beckman Instruments, Inc.: *See—*
Corwin, William C., 4,263,485, Cl. 200-5.00A.
Beecham Group Limited: *See—*
Buckle, Derek R.; and Smith, Harry, 4,263,299, Cl. 424-250.000.
Buckle, Derek R.; and Smith, Harry, 4,263,309, Cl. 424-269.000.
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,263,314, Cl. 424-274.000.
Beekman, Stanley: *See—*
Block, Barry H.; and Beekman, Stanley, 4,262,435, Cl. 36-129.000.
Behr, R. Douglas: *See—*
Sutrina, Thomas A.; and Behr, R. Douglas, 4,263,079, Cl. 156-244.110.
Behrendt, Manfred: *See—*
Bauer, Heinz; Gedig, Alfred; Frohnhaus, Reiner; Becker, Burckhard; Behrendt, Manfred; and Busch, Jurgen, 4,262,963, Cl. 297-473.000.
Bell Telephone Laboratories, Incorporated: *See—*
Kohl, Paul A., 4,263,106, Cl. 204-43.00S.
Muehlhausen II, Almon A., 4,262,985, Cl. 339-99.00R.
Sinclair, William R.; and van Roosbroeck, Willy W., 4,263,032, Cl. 65-3.00A.
Bell, William W., Jr., to Carrier Corporation. Refrigeration circuit defrost system, method and components. 4,262,496, Cl. 62-504.000.
Bellee, Ernest C.; Immell, Raymond G.; and Sasser, Bill H., to Motorola, Inc. Dual polarized image antenna. 4,263,598, Cl. 343-700.0MS.
Bellino, Ralph R.: *See—*
Wilhelm, Kenneth W.; and Bellino, Ralph R., 4,262,403, Cl. 29-220.000.
Beloit Corporation: *See—*
Moen, Carl J., 4,262,700, Cl. 138-26.000.
Beltzer, Bernard: *See—*
Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, 4,263,617, Cl. 358-186.000.
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A. Biodestructive material for bone fixation elements. 4,263,185, Cl. 260-17.40R.
Bender, Paul E., to SmithKline Corporation. 5,6-Phenyl-2,3-dihydroimidazo [2,1-b] thiazoles. 4,263,311, Cl. 424-270.000.
Bendix Corporation, The: *See—*
Gallusser, David O.; Pfendler, Donald L.; Uhlig, Herbert K.; Frear, David L.; Hemmer, Valentine J.; and Toombs, Gary C., 4,262,987, Cl. 339-258.00R.
Henrich, Robert S., 4,263,652, Cl. 364-431.000.
Lamarche, Michel; Petrov, Dimitri; and Maine, Arthur E., 4,262,545, Cl. 73-861.270.
Benedick, Edward H., to Regenerative Environmental Equipment Co., Inc. Hatch and hatch cover for thermal regeneration apparatus. 4,263,259, Cl. 422-173.000.
Benenati, Salvatore. Comminuting powered lawn mower. 4,262,476, Cl. 56-295.000.
Benjamin, Joel M., Jr.: *See—*
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,263,556, Cl. 328-207.000.
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., to Motorola, Inc. Digital data processing system with interface adaptor having programmable, monitorable control register therein. 4,263,650, Cl. 364-200.000.
Bensahel, Daniel; Marine, Jean; and Schaub, Bernard, to Commissariat a l'Energie Atomique. Method for the manufacture of light emitting and/or photodetective diodes. 4,263,056, Cl. 148-1.500.
Bentley, Wm. F.; Luedtke, Arthur; and Scott, James E., to United States of America, FCC. Nondisruptive ADF system. 4,263,597, Cl. 343-121.000.
Berber, Viktor A.; and Korobov, Gennady G. Truncated conical disc separator. 4,262,841, Cl. 233-29.000.
Berens, George; and Honig, Milton L., to Stauffer Chemical Company. Automatic transmission fluid comprising esters derived from a particular monocarboxylic acid composition. 4,263,159, Cl. 252-79.000.

Berg, Bernard J.; and Thompson, Darrell T., to Foresight Enterprises, Incorporated. Control system for the electrolytic recovery of silver from photographic fixing solution. 4,263,108, Cl. 204-109.000.

Bergan, Norman A., to Dimark, Inc. Method for fabricating improved cutter cones for a food processing machine. 4,262,559, Cl. 76-101.00A.

Berger, Joseph C.; Fitzpatrick, James E.; and Whelan, James P., to Standard Oil Company (Indiana). Resin-foam laminate. 4,263,247, Cl. 264-273.000.

Bergeson, Richard P., to Maytag Company, The. Switch adjustment mechanism. 4,263,489, Cl. 200-81.00R.

Bergler, Otto; and Lutz, Eugen, to Eugen Lutz GmbH & Co. Maschinenfabrik. Keyhole saw. 4,262,421, Cl. 30-393.000.

Bergwerksverband GmbH: *See*—
Henning, Klaus-Dirk; Juntgen, Harald; and Klein, Jurgen, 4,263,271, Cl. 423-573.00G.

Berke, Herbert, to United States of America, Navy. Charge coupled device signal output summing circuit. 4,263,621, Cl. 358-213.000.

Bernard, Walter J., to Sprague Electric Company. Electrochemical removal of surface copper from aluminum foil. 4,263,113, Cl. 204-146.000.

Bernatt, Joseph; and Vojta, Karel E., to S & C Electric Company. Shunt trip mechanism for a circuit interrupting device. 4,263,572, Cl. 335-26.000.

Berndt, Gerhard; Bartsch, Adalbert; and Kolln, Olaf, to Norddeutsche Affinerie. Electrolytic cell for the recovery of nonferrous metals and improved anode therefor. 4,263,120, Cl. 204-273.000.

Bernhard, Theodore L.: *See*—
Merrell, Gregory L.; and Bernhard, Theodore L., 4,263,647, Cl. 364-101.000.

Bernhardt & Frederick Co., Inc.: *See*—
Giebeler, Bernhardt F., 4,262,693, Cl. 137-494.000.

Bernoteit, Kenneth G.; and Bourke, Robert F., to Gould Inc. Universal command signal producing means. 4,262,769, Cl. 180-323.000.

Berry, Desmond J.; and Blankfield, Larry. Air-water outlet fitting. 4,262,371, Cl. 4-191.000.

Berthold, John W., III, to United States of America, National Security Agency. Variable integrated optical logic element. 4,262,992, Cl. 350-96.140.

Bertin, Elio, to Flexco S.r.l. Movable and extensible covering for large spans. 4,262,460, Cl. 52-64.000.

Bertrand, Alcide. Bearing support. 4,262,976, Cl. 308-9.000.

Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., to Phillips Petroleum Company. Process for cracking hydrocarbons with a catalyst passivated with an antimony tris (hydrocarbyl sulfide). 4,263,130, Cl. 208-113.000.

Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., to Phillips Petroleum Company. Passivation of metals contaminating a cracking catalyst with an antimony tris(dihydrocarbyl phosphite) catalyst and process of cracking therewith. 4,263,131, Cl. 208-114.000.

Best Lock Corporation: *See*—
Flack, Max L.; and Roos, William G., 4,262,507, Cl. 70-432.000.

Bethel, Lawrence L.: *See*—
Skinner, David R.; Bethel, Lawrence L.; and Clemens, Ralph S., 4,262,705, Cl. 138-149.000.

Bethlehem Steel Corporation: *See*—
DeMasi, Gordon A.; and Staats, Richard A., 4,262,827, Cl. 222-607.000.
Porter, Richard W., 4,263,099, Cl. 201-39.000.

Bettin, Elizabeth M. Device for cooling microtome blade. 4,262,567, Cl. 83-171.000.

Bettin, Hubertus; and Bornemann, Rainer, to Olympia Werke AG. Controlled positioning of a motor shaft. 4,263,537, Cl. 318-561.000.

Betz Laboratories, Inc.: *See*—
Klaessig, Frederick C.; and Jacques, Donald F., 4,263,092, Cl. 162-48.000.

Bialkowski, Ludwik S., to ACF Industries, Incorporated. Metal seat assemblies for valves. 4,262,688, Cl. 137-242.000.

Bialy, Jerzy J.: *See*—
Sung, Rodney L.; Bialy, Jerzy J.; Dorn, Peter; Cullen, William P.; and Nebzydoski, John W., 4,263,015, Cl. 44-63.000.

Bianco, James S. Bar code label protection device. 4,263,503, Cl. 235-487.000.

BICC Limited: *See*—
Pigott, Stanley W., 4,262,513, Cl. 72-45.000.

Bichsel, Stanley E.; Wang, Yueh; and Sandre, Andrew M., to American Crystal Sugar Company. Production of fructose and useful by-products. 4,263,052, Cl. 127-41.000.

Bielli, Paolo; and De Padova, Salvatore, to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A. Parabolic reflector antenna for telecommunication system. 4,263,599, Cl. 343-781.00R.

Binegar, Scott W., to ACF Industries, Incorporated. High pressure stem packing for gate valves. 4,262,690, Cl. 137-246.130.

Bingham, John A. C.; and Dang, Xuong K., to Racal-Vadic, Inc. Receive buffer for converting synchronous-to-asynchronous data. 4,263,673, Cl. 375-117.000.

Bingham, Wallace K., to Minnesota Mining and Manufacturing Company. Coating composition for forming retroreflective treatments on fabrics. 4,263,345, Cl. 427-163.000.

Binns Fencing Limited: *See*—
Binns, Julian R. H.; and Grange, Kenneth H., 4,262,884, Cl. 256-42.000.

Binns, Julian R. H.; and Grange, Kenneth H., to Binns Fencing Limited. Fencing with line wire tensioner. 4,262,884, Cl. 256-42.000.

Bird Electronic Corporation: *See*—
Mecklenburg, Frank H., 4,263,653, Cl. 364-483.000.

Blackburn, Charles M.: *See*—
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,262,470, Cl. 53-202.000.
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,262,474, Cl. 53-551.000.

Blankfield, Larry: *See*—
Berry, Desmond J.; and Blankfield, Larry, 4,262,371, Cl. 4-191.000.

Blanz, John H. Torquer/thruster. 4,262,756, Cl. 173-149.000.

Blattner, Hans; and Storni, Angelo, to Ciba-Geigy Corporation. Azatetracyclic carbonitriles. 4,263,315, Cl. 424-274.000.

Blaupunkt-Werke GmbH: *See*—
Timm, Horst, 4,263,628, Cl. 360-96.300.

Blessman, Heinz: *See*—
Wagener, Heinrich; and Blessman, Heinz, 4,262,991, Cl. 350-86.000.

Blink, James A.; and Nieder, Alvin E. Amphibious vehicle bridge apparatus. 4,262,381, Cl. 14-2.600.

Block, Barry H.; and Beekman, Stanley. Athletic shoe. 4,262,435, Cl. 36-129.000.

Block Drug Company Inc.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,263,321, Cl. 424-320.000.

Blue Water Terminal Systems N.V.: *See*—
Nooteboom, Urias G., 4,262,620, Cl. 114-230.000.

Bluemel, Harald, to Chemische Werke Huels Aktiengesellschaft. Thermoplastic materials. 4,263,186, Cl. 260-23.00H.

Blurton, Keith F., to Institute of Gas Technology. Fuel cell electrode. 4,263,376, Cl. 429-42.000.

Board of Reagents, State of Florida: *See*—
Charudattan, Raghavan, 4,263,036, Cl. 71-66.000.

Bochkarev, Ellin P.; Voronin, Nikolai G.; Korobov, Oleg E.; Maslov, Vadim N.; and Nikitina, Irina B. Method of applying layers of source substance over recipient and device for realizing same. 4,262,630, Cl. 118-715.000.

Bock, Kurt, to Bayerische Motoren Werke A.G. Flexural vibration damper. 4,262,977, Cl. 308-26.000.

Bocsanczy, Janos: *See*—
Stalherm, Dieter; and Bocsanczy, Janos, 4,263,100, Cl. 201-41.000.

Bodenseewerk Perkin-Elmer & Co.: *See*—
Gonner, Winfried, 4,262,879, Cl. 251-230.000.

Bodina, Ltd.: *See*—
Thornton, Alan; and Uttley, John S., 4,263,358, Cl. 428-195.000.

Bodle, William W.: *See*—
Weil, Sanford A.; Punwani, Dharamvir; and Bodle, William W., 4,263,125, Cl. 208-8.00R.

Bodor, Nicholas S.: *See*—
Epstein, Joseph; and Bodor, Nicholas S., 4,263,305, Cl. 424-263.000.

Boehringer Ingelheim GmbH: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,263,300, Cl. 424-251.000.
Weber, Karl H.; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,263,310, Cl. 424-269.000.

Boeing Company, The: *See*—
Dean, Roy D., 4,262,868, Cl. 244-214.000.
Elrod, Samuel D., 4,263,375, Cl. 428-594.000.
Gupta, Alankar; and Runnels, Joe N., 4,262,495, Cl. 62-402.000.
Peash, Douglas E., 4,262,391, Cl. 24-18.000.

Bogentoft, Conny B.: *See*—
Appelgren, Curt H.; Bogentoft, Conny B.; and Sjogren, John A., 4,263,273, Cl. 424-21.000.

Bogese, Stephen B., II, to Virginia Plastics Company. Circuit board connector for insulated wire. 4,262,983, Cl. 339-97.00C.

Bohm, Manfred; and Hofgen, Gunter, to International Standard Electric Corporation. Reference station for a distance-measuring system. 4,263,596, Cl. 343-106.00R.

Boisvert, Jean; Bond, Bobby J.; and McCoy, Floyd B., Jr., to Reycan Research Limited. Process for automatically controlling the shape of sheet metal produced in a rolling mill. 4,262,511, Cl. 72-17.000.

Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., to International Mobile Machines Incorporated. Monostable system. 4,263,556, Cl. 328-207.000.

Boll, Walter: *See*—
Moller, Friedrich; Marschner, Friedemann; Supp, Emil; Boll, Walter; and Cornelius, Gerhard, 4,263,141, Cl. 260-450.000.

Bond, Bobby J.: *See*—
Boisvert, Jean; Bond, Bobby J.; and McCoy, Floyd B., Jr., 4,262,511, Cl. 72-17.000.

Boots Hercules Agrochemicals Co.: *See*—
Pombo, Melvin M., 4,263,226, Cl. 564-459.000.

Borg-Warner Corporation: *See*—
Taylor, Wayne H., 4,262,786, Cl. 192-46.000.

Bornemann, Rainer: *See*—
Bettin, Hubertus; and Bornemann, Rainer, 4,263,537, Cl. 318-561.000.

Bornengo, Giorgio: *See*—
Merlo, Fabrizio; Battisti, Ruggero; Bornengo, Giorgio; Mazzaferro, Nicola; Mangini, Angelo; and Tundo, Antonio, 4,263,204, Cl. 260-147.000.

Bosch Siemens Hausgerate GmbH: *See*—
Leuschner, Udo; and Zinsberger, Alfons, 4,262,585, Cl. 99-280.000.

Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., to United States of America, Energy. Apparatus for continuously referenced analysis of reactive components in solution. 4,263,406, Cl. 435-291.000.

Bouge, Gilbert: *See*—
Michel, Max; Vrisakis, Georges; Seigneurin, Laurent; and Bouge, Gilbert, 4,263,266, Cl. 423-329.000.

Bouplon, Edward J., to Allied Steel & Tractor Products, Inc. Road surface removing machine. 4,262,966, Cl. 299-39.000.

Bouquet, Francois: *See*—
Battigelli, Jean A.; and Bouquet, Francois, 4,263,007, Cl. 425-371.000.

Bourcier de Caron de Previnquieres, Alain J. M. Removable, non-skid tire fitting. 4,262,723, Cl. 152-222.000.

Bourgeois, Ronald D. Conveyor accelerator system. 4,262,794, Cl. 198-459.000.

Bourke, Robert F.: *See*—
Bernoteit, Kenneth G.; and Bourke, Robert F., 4,262,769, Cl. 180-323.000.

Bowden, Roy D.; Burgess, Leslie; and Clark, Raymond J., to Imperial Chemical Industries Limited. Preparation of aromatic fluoro-compounds. 4,263,458, Cl. 568-323.000.

Bowerman, Harold H., Jr.; and Ireland, Robert W., to B. F. Goodrich Company, The. Method of making a puncture-sealing tire with sealant consisting of a vinylidene-terminated liquid polymer and an amine. 4,263,075, Cl. 156-115.000.

Bowers, William D., to Scott & Fetzer Company, The. Vacuum cleaner bag assembly. 4,262,384, Cl. 15-328.000.

Bracke, William J. I., to Labofina, S. A. Process for preparing styrenic resins. 4,263,420, Cl. 525-309.000.

Bradley, Harvey, to Bradley Lifting Corp. Lifting tong toggle lock. 4,262,952, Cl. 294-116.000.

Bradley Lifting Corp.: *See*—
Bradley, Harvey, 4,262,952, Cl. 294-116.000.

Branch, Gregory L., to Johnson Associates, Inc. Broccoli bunching and tying machine. 4,262,944, Cl. 289-2.000.

Brandrup, Johannes: *See*—
Busch, Wolfram; Brandrup, Johannes; Sommer, Werner; and Semmler, Horst, 4,263,200, Cl. 260-42.490.

Brandt, George W.; and Dubberley, Charles A., to General Electric Company. Two-speed refrigerant motor compressor. 4,263,540, Cl. 318-775.000.

Brandt, Joachim; and Kantelhardt, Werner, to Apparatebau Rothemuhle Brandt & Kritzler. Electrostatic precipitator with rappers for the corona electrodes. 4,263,022, Cl. 55-112.000.

Braun Aktiengesellschaft: *See*—
Braun, Gebhard, 4,262,415, Cl. 30-34.100.

Braun, David L.: *See*—
Johnson, Ernest D.; and Braun, David L., 4,262,408, Cl. 29-507.000.

Braun, Gebhard, to Braun Aktiengesellschaft. Hair trimmer. 4,262,415, Cl. 30-34.100.

Braunschweigische Maschinenbauanstalt: *See*—
Ries, Walter, 4,263,090, Cl. 159-16.00R.

Brautigam, Max, to Linde Aktiengesellschaft. High pressure and high temperature heat exchanger. 4,263,260, Cl. 422-201.000.

Brechner, Ernst: *See*—
Bauchert, Jens; and Brechner, Ernst, 4,263,577, Cl. 338-242.000.

Bremenkamp, John P. Tool apparatus for sprinkler systems. 4,262,812, Cl. 212-243.000.

Bremer, Robert C., Jr., to Wallace Murray Corporation. Torsional vibration damper. 4,262,553, Cl. 74-574.000.

Brendle, Ralph N.; Miley, John W.; and Allen, George A., to Milliken Research Corporation. Method for improving the dyeing characteristics of textile materials containing polyolefin fibers and products produced thereby. 4,263,009, Cl. 8-495.000.

Bretzger, Reinhard; Kienle, Fritz; and Lindenthal, Hans, to Voith Transmit GmbH. Method for installing a bearing in a universal coupling. 4,262,405, Cl. 29-252.000.

Bridgestone Tire Co., Ltd.: *See*—
Tadokoro, Yukio; and Matsumoto, Kenji, 4,262,721, Cl. 152-209.00R.
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,262,722, Cl. 152-209.00R.

Briggs, Peter J.; and Carpenter, Steven, to Matburn (Holdings) Limited. Method for producing catheters. 4,263,236, Cl. 264-26.000.

British Railways Board: *See*—
Lucas, John C.; and Aitken, William K., 4,262,845, Cl. 238-7.000.

Brockadale Developments Limited: *See*—
Pentith, Gerald R. O., 4,262,478, Cl. 56-341.000.

Bromley, Robert L.: *See*—
Workman, David E.; Bromley, Robert L.; Burzen, Don N.; and McNeill, Judith K., 4,262,685, Cl. 132-79.00G.

Brooke, Arthur A., to Delamere & Williams Company, Limited. Method and apparatus for manufacturing tea bags and the like. 4,262,473, Cl. 53-450.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Sugaya, Takao; Yamashita, Chikao; and Yoshida, Noriyuki, 4,262,614, Cl. 112-158.00E.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Fischer, Albert G., 4,263,339, Cl. 427-64.000.
Melton, Keith; and Mercier, Olivier, 4,263,573, Cl. 337-140.000.
Schulze, Helmut; and Moll, Klaus, 4,263,542, Cl. 318-803.000.

Brown, Dale M.; and Garfinkel, Marvin, to General Electric Company. Composite conductive structures in integrated circuits and method of making same. 4,263,058, Cl. 148-6.000.

Brown, Ivan R.; and Lyon, Garnet R., to Hardinge Brothers, Inc. Turret indexing assembly for machine tools. 4,262,563, Cl. 82-36.00A.

Brown, Neil F.; Krier, Keith N.; Haub, Donald J.; and Waldhauser, Steven J., to Tennant Company. Multi-speed brush control. 4,262,382, Cl. 15-49.00R.

Brown, Vaikai K.; Gedeon, Roy M.; and Ping, David T., to Towmotor Corporation. Differential housing mounting support. 4,262,766, Cl. 180-75.000.

Bruckner, Carl-Heinz, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Auxiliary printing unit for a printing press, in particular a rotary printing press. 4,262,590, Cl. 101-76.000.

Brune, Heinz. Casings for heat exchangers and burner/recuperator assemblies incorporating such casings. 4,262,740, Cl. 165-67.000.

Brzezinski, Joseph, to Valley Industries, Inc. Solar radiation absorbing panel. 4,262,659, Cl. 126-449.000.

Buchanan, William I. Traffic cone rack for mounting on a vehicle. 4,262,831, Cl. 224-42.45R.

Buck, Charles E.; and Roga, Robert C., to Colgate-Palmolive Company. Emulsion-containing absorbent article having improved water holding capacity. 4,263,363, Cl. 428-284.000.

Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Heterocyclic coumarin derivatives. 4,263,299, Cl. 424-250.000.

Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Polycyclic triazoles used to inhibit allergic responses. 4,263,309, Cl. 424-269.000.

Buckley, Alan J.; Singer, Michael; and Wild, James H., to Imperial Chemical Industries Limited. Anti-fungal and anti-bacterial polyurethanes. 4,263,424, Cl. 528-85.000.

Bucyrus-Erie Company: *See*—
Jones, Byron M., 4,263,535, Cl. 318-87.000.

Bud, Hans: *See*—
Kosky, Julius, 4,262,395, Cl. 24-201.00C.

Budmiger, Hermann, to Laspo AG. Light ray target apparatus. 4,262,908, Cl. 273-310.000.

Bugaut, Andree; and Estradier, Francoise, to L'Oreal. 2,4-Dihydroxy-4'-(substituted amino)-diphenylamines. 4,263,213, Cl. 260-347.700.

Buhler, Karl, to BBC Brown, Boveri & Company Limited. Roller cradle of an inherently stable furnace. 4,263,469, Cl. 13-10.000.

Bujadoux, Karel, to Societe Chimique des Charbonnages - CdF Chimie. Catalysts comprising magnesium and transition metal. 4,263,170, Cl. 252-429.30C.

Bull, Dale L.; and Rautiola, Norman A., to Nartron Corp., a part interest. Method of manufacturing a lamp housing. 4,263,072, Cl. 156-73.100.

Bulten-Kanthal AB: *See*—
Sjoberg, Nils G., 4,263,470, Cl. 13-25.000.

Burch, John: *See*—
Chorey, James E.; and Burch, John, 4,262,491, Cl. 62-185.000.

Burdt, Dale M.: *See*—
Guhde, Donald J.; and Burdt, Dale M., 4,263,059, Cl. 148-6.200.

Bureau d'Etudes Techniques J. Hapel & Cie Ingenieurs Conseils Chillou: *See*—
Hapel, Joseph, 4,262,463, Cl. 52-98.000.

Burg, Raymond H.; Lohmann, Arthur M.; and George, William C., to United States of America, Army. Delay fuse. 4,262,598, Cl. 102-246.000.

Burgdorf, Jochen, to ITT Industries, Inc. Brake pressure regulator with by-pass. 4,262,968, Cl. 303-6.00C.

Burgess, George M.; and Avery, Roland M., Jr., to John D. Brush & Co., Inc. Fire-resistant safe and panel. 4,263,365, Cl. 428-310.000.

Burgess, Leslie: *See*—
Bowden, Roy D.; Burgess, Leslie; and Clark, Raymond J., 4,263,458, Cl. 568-323.000.

Burke, Edward F., Jr.; and Dunn, David S., to MFE Corporation. Vibration damper for a transducer carriage drive mechanism for use in a diskette system. 4,263,632, Cl. 360-106.000.

Burns, William K.; and Sheem, Sang K., to United States of America, Navy. Electrooptically balanced alternating $\Delta\beta$ switch. 4,262,993, Cl. 350-96.140.

Burroughs Wellcome Co.: *See*—
Miller, Richard J.; Chang, Kwen-Jen; and Cuatrecasas, Pedro, 4,263,255, Cl. 422-61.000.

Burton, R. Edward, to Microphor, Inc. Process and system for purifying water. 4,263,142, Cl. 210-608.000.

Burzen, Don N.: *See*—
Workman, David E.; Bromley, Robert L.; Burzen, Don N.; and McNeill, Judith K., 4,262,685, Cl. 132-79.00G.

Busch, Jurgen: *See*—
Bauer, Heinz; Gedig, Alfred; Frohnhaus, Reiner; Becker, Burckhard; Behrendt, Manfred; and Busch, Jurgen, 4,262,963, Cl. 297-473.000.

Busch, Wolfram; Brandrup, Johannes; Sommer, Werner; and Semmler, Horst, to Hoechst Aktiengesellschaft. Free flowing chloropolyethylene, its manufacture and use. 4,263,200, Cl. 260-42.490.

Butler, Walter J.; and Milkovic, Miran, to General Electric Company. Pressure and temperature sensor. 4,262,532, Cl. 73-345.000.

Butzen, Thomas J., to Paragon Resources, Inc. Vent damper drive. 4,262,652, Cl. 126-285.00B.

Buysch, Hans-Josef; Gruber, Hermann; Wellner, Wolfgang; and Leiritz, Karl, to Bayer Aktiengesellschaft. Cyanoethylated polyamide amines as hardeners for polyepoxides. 4,263,162, Cl. 252-182.000.

C. Plath KG: *See*—
Holting, Johann-Peter; and Rahn, Armin, 4,262,528, Cl. 73-139.000.

C. Rob. Hammerstein GmbH: *See*—
Bauer, Heinz; Gedig, Alfred; Frohnhaus, Reiner; Becker, Burckhard; Behrendt, Manfred; and Busch, Jurgen, 4,262,963, Cl. 297-473.000.

Cady, William R., to General Electric Co. Ultrasonic transducer fabricated as an integral park of a monolithic integrated circuit. 4,262,399, Cl. 29-25.420.

Cannady, Daniel L., Jr.: *See—*
McCaskey, Harold O., Jr.; and Cannady, Daniel L., Jr., 4,263,373, Cl. 428-531.000.

Canon Kabushiki Kaisha: *See—*
Fujita, Takayuki, 4,263,658, Cl. 364-709.000.
Hirata, Osamu; and Seki, Mitsuaki, 4,263,659, Cl. 364-709.000.
Nishimura, Yukuo; Haruta, Masahiro; Takatori, Yasushi; and Nishide, Katsuhiko, 4,263,601, Cl. 346-1.100.
Saito, Takashi; and Watanabe, Tsuyoshi, 4,263,391, Cl. 430-125.000.
Sato, Tadashi; and Tanaka, Keiji, 4,262,999, Cl. 355-15.000.
Tokuhara, Mitsuhiro, 4,263,613, Cl. 358-55.000.

Capots, Larry H.: *See—*
Gregory, William D.; Capots, Larry H.; George, James P.; and Janik, Richard, 4,263,551, Cl. 324-233.000.

Cardiac Pacemakers, Inc.: *See—*
Carlson, Scott W.; and Bartelt, James T., 4,263,548, Cl. 324-102.000.
Feiman, Vladimir; and Luksha, Eugene, 4,263,378, Cl. 429-105.000.

Carl Still GmbH & Co. KG., Firma: *See—*
Stalherm, Dieter; and Bocsanczy, Janos, 4,263,100, Cl. 201-41.000.

Carl Still GmbH & Co. KG., Firma: *See—*
Thiersch, Friedrich; and Lucas, August, 4,263,101, Cl. 202-248.000.

Carl Zeiss-Stiftung: *See—*
Wagener, Heinrich; and Blessman, Heinz, 4,262,991, Cl. 350-86.000.

Carlow, Earl F.: *See—*
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,263,650, Cl. 364-200.000.

Carlson, Scott W.; and Bartelt, James T., to Cardiac Pacemakers, Inc. Midpoint measuring circuit. 4,263,548, Cl. 324-102.000.

Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., to Aktiebolaget Hassle. β-Receptor blocking compounds and treatment of cardiovascular disorders therewith. 4,263,323, Cl. 424-324.000.

Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., to Aktiebolaget Hassle. β-Receptor blocking compounds and treatment of cardiovascular disorders thereiwth. 4,263,325, Cl. 424-330.000.

Carney, Edward J.; Mediratta, Harbans L.; and Heximer, Donald G., to Acco Industries Inc. Towcart conveyor system. 4,262,600, Cl. 104-172.0BT.

Carpenter, Steven: *See—*
Briggs, Peter J.; and Carpenter, Steven, 4,263,236, Cl. 264-26.000.

Carravetta, James J.; and Robinson, Edward A., to Modine Manufacturing Company. Solder coating apparatus. 4,262,625, Cl. 118-101.000.

Carrier Corporation: *See—*
Bell, William W., Jr., 4,262,496, Cl. 62-504.000.
Conine, Robert D., 4,262,488, Cl. 62-117.000.

Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., to Exxon Research & Engineering Co. Supported nickel-cobalt-silica coprecipitated hydrogenation catalyst. 4,263,173, Cl. 252-452.000.

Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., to Exxon Research & Engineering Co. Hydrogenation process using supported nickel-cobalt-silica coprecipitated catalyst. 4,263,225, Cl. 564-422.000.

Caruso, Gerard P., to Shell Oil Company. Grease compositions. 4,263,156, Cl. 252-51.50A.

Case, Richard B.: *See—*
Strasser, Robert A.; and Case, Richard B., 4,262,931, Cl. 280-729.000.

Cassandrini, Paolo; and Tozzi, Antonio, to Chimosa Chimica Organica S.p.A. Piperidyl-triazine derivatives. 4,263,434, Cl. 544-198.000.

Castiglione, Alfonso. System for separating paraffin from oil in refineries. 4,262,790, Cl. 196-14.500.

Castner, Raymond P.: *See—*
Cooper, Frank W., Jr.; and Castner, Raymond P., 4,262,402, Cl. 29-157.400.

Caterpillar Tractor Co.: *See—*
Creger, Todd D.; Nelson, Steven R.; and Wright, Paul L., 4,262,518, Cl. 72-393.000.
Grawey, Charles E., 4,262,704, Cl. 138-130.000.
Hart, Cullen P., 4,262,556, Cl. 74-805.000.
Haslett, Glenn M., 4,262,970, Cl. 305-11.000.
Kuhfuss, Alvin L., Jr., 4,262,550, Cl. 74-482.000.
Roley, Robert D., 4,262,914, Cl. 277-84.000.
Shuler, James R., 4,262,971, Cl. 305-14.000.

Cavil, David T.; and Krueger, William R., to Outboard Marine Corporation. Digital timing control system for an internal combustion engine. 4,262,643, Cl. 123-416.000.

Cecchin, Giuliano: *See—*
Scata, Umberto; and Cecchin, Giuliano, 4,263,169, Cl. 252-429.00B.

Cecere, Andrew P., to Samcoe Holding Corporation. Method for calendering tubular knitted fabrics. 4,262,397, Cl. 26-84.000.

Ceel-Co: *See—*
Fredrickson, Lloyd A.; and VanAusdall, James G., 4,262,406, Cl. 29-433.000.

Cego, Inc.: *See—*
George, Paul R., 4,263,029, Cl. 55-398.000.

Celanese Corporation: *See—*
Tan, Marshall, 4,263,245, Cl. 264-184.000.

Centre Stephanois de Recherches Mecanique Hydromecanique et Frottement: *See—*
Gaucher, Antoine; and Zabinski, Bernard, 4,263,060, Cl. 148-6.300.

Centre Technique du Bois: *See—*
Fondronnier, Jacques; and Guillerm, Jean, 4,262,566, Cl. 83-116.000.

Certain-teed Corporation: *See—*
Mitchell, Andrew; and Janssen, Kermit W., 4,262,744, Cl. 166-227.000.

CGS Research and Development, Inc.: *See—*
Corgan, Donald M.; and Grimes, Raymond L., 4,263,579, Cl. 340-58.000.

Chabria, Paul R. Gun for in situ formation of foam in packages. 4,262,848, Cl. 239-112.000.

Chambers, Robert R., to Atlantic Richfield Company. Swimming pool cover assembly. 4,262,373, Cl. 4-502.000.

Champion-Edison, Inc.: *See—*
Haag, David R., 4,262,855, Cl. 242-58.100.

Champion International Corporation: *See—*
Lyons, Russell J., 4,262,905, Cl. 273-129.00W.
Roccaforte, Harry L., 4,262,814, Cl. 215-232.000.

Chang, Kwen-Jen: *See—*
Miller, Richard J.; Chang, Kwen-Jen; and Cuatrecasas, Pedro, 4,263,255, Cl. 422-61.000.

Channing, Harry M.; Nees, John M.; and Eberle, William J., to General Battery Corporation. Storage battery with temporary side terminal. 4,263,379, Cl. 429-179.000.

Chappell, John A., Jr., to United States of America, Army. Digital interface circuit for control of pressure scanner. 4,263,655, Cl. 364-558.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Comstock, Robert H., 4,263,527, Cl. 310-316.000.

Charudattan, Raghavan, to Board of Reagents, State of Florida. Method and composition for controlling Hydrilla. 4,263,036, Cl. 71-66.000.

Chatterjea, Probir K., to International Harvester Company. Brake control with pilot actuation. 4,262,969, Cl. 303-71.000.

Chaumont, Philippe; Herz, Jean; and Prud'Homme, Christian, to Rhone-Poulenc Industries. Thermoplastic, elastomeric polystyrene/-diorganopolysiloxane block copolymers. 4,263,401, Cl. 525-106.000.

Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, to L.G.T. Laboratoire General des Telecommunications. System for the transmission of a composite television signal. 4,263,617, Cl. 358-186.000.

Chemische Werke Huels Aktiengesellschaft: *See—*
Bluemel, Harald, 4,263,186, Cl. 260-23.00H.

Chemplex Company: *See—*
Shida, Mitsuzo; Pullukat, Thomas J.; and Hoff, Raymond E., 4,263,171, Cl. 252-429.00C.

Chen, Chin H., to Eastman Kodak Company. Novel electron donor precursors and photographic element containing them. 4,263,393, Cl. 430-218.000.

Chen, Chun F.: *See—*
Lee, Maw H.; and Chen, Chun F., 4,263,536, Cl. 318-266.000.

Chen, Nai Y.; and Shihabi, David S., to Mobil Oil Corporation. Hydrotreating/hydrocracking process with low acidity catalyst. 4,263,129, Cl. 208-111.000.

Chen, Thomas T.; and Gergis, Isoris S., to Rockwell International Corporation. Magnetic bubble domain organization using double period input/output devices. 4,263,661, Cl. 365-15.000.

Cheng, William J.; and Leiendecker, Donald M., to Petrolite Corporation. Oil solutions and/or dispersions of hydrated chromium oxides. 4,263,151, Cl. 252-33.000.

Chenoweth, Roger D.; and Smith, Donald J., to International Business Machines Corporation. Magnetic disk-jacket assembly. 4,263,634, Cl. 360-133.000.

Cherian, Gabriel B.; Scheingold, William S.; and Kandybowski, Steven J., to AMP Incorporated. Electrical interconnect device. 4,262,986, Cl. 339-252.00R.

Chevron Research Company: *See—*
Frost, Kenneth, 4,263,155, Cl. 252-49.800.
King, John M.; and deVries, Louis, 4,263,152, Cl. 252-46.400.

Chez, Roman. Adjustable scaffold. 4,262,774, Cl. 182-179.000.

Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, 4,263,291, Cl. 424-246.000.

Chibana, Masanobu, to Nippon Gakki Seizo Kabushiki Kaisha. Digital electronic musical instruments. 4,262,573, Cl. 84-1.010.

Chimosa Chimica Organica S.p.A.: *See—*
Cassandrini, Paolo; and Tozzi, Antonio, 4,263,434, Cl. 544-198.000.

Ching, Ta-Yen, to General Electric Company. Dichloroformates. 4,263,222, Cl. 260-463.000.

Chiu, Ran F.; Parrish, Henry H.; Kromer, Philip F., III; and Kao, Ming L., to Racal-Milgo, Inc. Sampling clock correction circuit. 4,263,671, Cl. 375-15.000.

Chiyomaru, Isao: *See—*
Jikihara, Kazuo; Itoh, Shigekazu; Takayama, Shuichi; Sato, Koichi; Kimura, Ichiro; and Chiyomaru, Isao, 4,263,040, Cl. 71-100.000.

Chorey, James E.; and Burch, John, to Controlled Energy Systems Company. Electronic modulating system for air conditioning apparatus. 4,262,491, Cl. 62-185.000.

Chr. F. Petri's Eftf. I/S: *See—*
Pedersen, Arne M.; and Sonder, Henning, 4,263,327, Cl. 426-3.000.

Christensen, Marvin M., to Dow Chemical Company, The. Method to fabricate polymeric membranes and diaphragms. 4,263,121, Cl. 204-296.000.

Christopher, Gordon W. Hydraulic elevator. 4,262,777, Cl. 187-17.000.

Christou, Aristos; and Davey, John E., to United States of America, Navy. Ion-implanted, improved ohmic contacts for GaAs semiconductor devices. 4,263,605, Cl. 357-65.000.

Chrysler Corporation: *See—*
Fenn, Gordon W., 4,263,233, Cl. 261-78.00R.

Chubb Industries Limited: *See*—
Krebs, Murray A., 4,262,607, Cl. 109-58.000.
Chute, Challoner R. Shaped articles of polypyrrolidone and method of preparation thereof. 4,263,187, Cl. 260-29.20N.
Ciba-Geigy Corporation: *See*—
Blattner, Hans; and Storni, Angelo, 4,263,315, Cl. 424-274.000.
Ferrini, Pier G.; Goschke, Richard; Sallmann, Alfred; and Rossi, Alberto, 4,263,455, Cl. 564-305.000.
Hari, Stefan, 4,263,205, Cl. 260-152.000.
Kradolfer, Friedrich; and Zak, Otokar, 4,263,280, Cl. 424-114.000.
Lienhard, Paul; Iqbal, Abul; and Peter, Heinz, 4,263,197, Cl. 260-37.00N.
Meyer, Alfred; and Kocher, Clemens, 4,263,324, Cl. 424-325.000.
Parekh, Mansukh G., 4,263,232, Cl. 260-989.000.
Rasberger, Michael; Evans, Samuel; and Moser, Paul, 4,263,202, Cl. 260-45.75R.
Slongo, Mario; and Nikles, Erwin, 4,263,505, Cl. 260-45.8NZ.
Steiner, Eginhard; and Schmidt, Andreas, 4,263,157, Cl. 252-54.600.
Weber, Kurt; Luthi, Christian; and Meyer, Hans R., 4,263,431, Cl. 542-459.000.
Wegmuller, Hans; and Wurster, Rudolf F., 4,263,146, Cl. 210-679.000.
Ciccarelli, Michael F.; and Goehner, Raymond P., to General Electric Company. Combined x-ray diffraction and fluorescence spectroscopy apparatus with environmentally controllable chamber. 4,263,510, Cl. 250-272.000.
Ciccarelli, Roger N., to Xerox Corporation. Positively charged toners containing vinyl pyrrolidone polymers. 4,263,389, Cl. 430-106.000.
Citizen Watch Co., Ltd: *See*—
Murata, Mitsuhiro, 4,263,666, Cl. 368-187.000.
Clairol Incorporated: *See*—
Springer, William E.; and Walter, Henry J., 4,263,500, Cl. 219-377.000.
Clarion Co. Ltd.: *See*—
Kanai, Takao; and Nishikawa, Yasuhisa, 4,262,547, Cl. 74-10.330.
Clark, David P., to Eaton Corporation. Spring retainer-valve selector. 4,262,640, Cl. 123-198.00F.
Clark, Raymond J.: *See*—
Bowden, Roy D.; Burgess, Leslie; and Clark, Raymond J., 4,263,458, Cl. 568-323.000.
Clason, Donald L.; and Schroeck, Calvin W., to Lubrizol Corporation, The. Phosphite treatment of phosphorus acid salts and compositions produced thereby. 4,263,150, Cl. 252-32.70E.
Clawson, Arthur R.; Lum, Wing Y.; and McWilliams, Gerald E., to United States of America, Navy. Method of liquid phase epitaxial growth. 4,263,064, Cl. 148-171.000.
Clemens, Ralph S.: *See*—
Skinner, David R.; Bethel, Lawrence L.; and Clemens, Ralph S., 4,262,705, Cl. 138-149.000.
Clement, Joseph, to Mead Corporation, The. Display device with price-change cartridges. 4,262,436, Cl. 40-5?8.000.
Clopay Corporation: *See*—
Lee, Maw H.; and Chen, Chun F., 4,263,536, Cl. 318-266.000.
Cluniat, Claude: *See*—
Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, 4,263,617, Cl. 358-186.000.
Coffee, Robert D., to Atlantic Richfield Company. Supplemental weight percent analysis for chromatography. 4,262,520, Cl. 73-1.00G.
Colgate-Palmolive Company: *See*—
Buck, Charles E.; and Roga, Robert C., 4,263,363, Cl. 428-284.000.
Harvey, Kenneth, 4,263,276, Cl. 424-52.000.
Lazerand, Jean; and Risbec, Andre, 4,262,583, Cl. 493-444.000.
Collins, Marcus H., to Eaton Corporation. Water cooled brake having mixed boundary contact between the torque transmitting surfaces. 4,262,789, Cl. 192-113.00B.
Colon, Ismael; Maresca, Louis M.; and Kwiatkowski, George T., to Union Carbide Corporation. Coupling of aryl and heteroaryl mono chlorides. 4,263,466, Cl. 585-421.000.
Colt Industries Operating Corp: *See*—
Farnam, Robert G., 4,262,947, Cl. 293-1.000.
Cominco Ltd.: *See*—
Swinkels, Godefridus M.; Hirsch, Horst E.; Fairweather, Michael J.; and Parker, Ernest G., 4,263,109, Cl. 204-119.000.
Commercial Shearing, Inc.: *See*—
Williams, Arthur J., 4,262,915, Cl. 277-188.00R.
Commissariat a l'Energie Atomique: *See*—
Bensahel, Daniel; Marine, Jean; and Schaub, Bernard, 4,263,056, Cl. 148-1.500.
Compagnie Generale de Radiologie: *See*—
Palluet, Jean-Noel, 4,263,513, Cl. 250-439.00P.
Compagnie Generale des Etablissements Michelin: *See*—
Coulombeau, Alain; and Peyron, Georges, 4,263,383, Cl. 429-217.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Lafon, Jean-Luc, 4,263,564, Cl. 330-293.000.
Rocton, Lucien, 4,263,473, Cl. 174-70.00S.
Comstock, Robert H., to Charles Stark Draper Laboratory, Inc., The. Charge control of piezoelectric actuators to reduce hysteresis effects. 4,263,527, Cl. 310-316.000.
Concast AG: *See*—
Rohrig, Adalbert, 4,262,733, Cl. 164-412.000.
Congdon, James S., to National Semiconductor Corporation. Amplifier output stage distortion reduction. 4,263,563, Cl. 330-265.000.
Conine, Robert D., to Carrier Corporation. System and method for controlling the discharge temperature of a high pressure stage of a multi-stage centrifugal compression refrigeration unit. 4,262,488, Cl. 62-117.000.
Conn, Andrew F.: *See*—
Johnson, Virgil E., Jr.; Sundaram, T. R.; and Conn, Andrew F., 4,262,757, Cl. 175-67.000.
Conner, John M.: *See*—
Englett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., 4,262,390, Cl. 19-50.000.
Constantin Hang GmbH & Co., Firma: *See*—
Hang, Eberhard; and Kastl, Matthias, 4,262,404, Cl. 29-243.530.
Container Corporation of America: *See*—
Nelson, Bennie C., Jr., 4,262,804, Cl. 206-561.000.
Contraves Goerz Corporation: *See*—
Rettew, Richard, 4,262,455, Cl. 51-142.000.
Controlled Energy Systems Company: *See*—
Chorey, James E.; and Burch, John, 4,262,491, Cl. 62-185.000.
Conway, Gerald A. Display and kit therefor. 4,262,437, Cl. 40-604.000.
Cook, Kenneth M.; and Hametta, Alan W. Discriminating metal detector with compensation for ground minerals. 4,263,553, Cl. 324-327.000.
Cook, Robert C., to Cook, Robert C. Office label printer and dispenser. 4,262,591, Cl. 101-92.000.
Cooper, Frank W., Jr.; and Castner, Raymond P., to Westinghouse Electric Corp. Method for servicing a steam generator. 4,262,402, Cl. 29-157.400.
Cooper, Glenn D.; and Floryan, Daniel E., to General Electric Company. Process for isolation of polyphenylene ether resin by crumbing in hot water. 4,263,426, Cl. 528-486.000.
Cooper, Julius; and Ensmann, Burt W., to Ideal Toy Corporation. Big mouth doll. 4,262,444, Cl. 46-119.000.
Corcom, Inc.: *See*—
Toppeto, Alphonse A., 4,263,549, Cl. 324-127.000.
Corgan, Donald M.; and Grimes, Raymond L., to CGS Research and Development, Inc. Tire pressure alarm. 4,263,579, Cl. 340-58.000.
Cornelius, Gerhard: *See*—
Moller, Friedrich; Marschner, Friedemann; Supp, Emil; Boll, Walter; and Cornelius, Gerhard, 4,263,141, Cl. 260-450.000.
Corning Glass Works: *See*—
Schultz, Peter C., 4,263,031, Cl. 65-3.00A.
Cort, Joseph H., to Ferring Pharmaceuticals, Inc. Method for prophylaxis and/or treatment of sickle cell disease. 4,263,283, Cl. 424-177.000.
Corte, Vincent C. Caulking device. 4,262,822, Cl. 222-174.000.
Corth, Richard: *See*—
Van Broekhoven, Jacob; and Corth, Richard, 4,263,530, Cl. 313-487.000.
Corwin, Charles H. Hinge ski. 4,262,924, Cl. 280-603.000.
Corwin, William C., to Beckman Instruments, Inc. Keyboard of membrane switches with tactile feedback. 4,263,485, Cl. 200-5.00A.
Cotter, Robert J.: *See*—
Gardner, Hugh C.; and Cotter, Robert J., 4,263,413, Cl. 525-34.000.
Cotter, William L. Calvarium cap. 4,262,398, Cl. 27-21.000.
Coulin, Jean P., to Societe d'Etudes de Machines Thermiques S.E.M.T. Mushroom valve with forced fluid cooling, in particular for an internal combustion engine. 4,262,638, Cl. 123-41.410.
Coulombeau, Alain; and Peyron, Georges, to Compagnie Generale des Etablissements Michelin. Zinc electrode. 4,263,383, Cl. 429-217.000.
Coulter Electronics, Inc.: *See*—
Morle, Charles W., 4,263,256, Cl. 422-66.000.
Coulter Systems Corporation: *See*—
Kuehnle, Manfred R.; and Perry, George J., 4,262,998, Cl. 355-10.000.
Martinez, Ferdinand, 4,263,387, Cl. 430-49.000.
Courrege, Philippe; Deflandre, Jean; and Valette, Francois, to Agence Nationale de Valorisation de la Recherche. Installation for storing and recovering heat energy, particularly for a solar power station. 4,262,735, Cl. 165-4.000.
Courtaulds Limited: *See*—
Dunbar, John H.; and Gray, Kenneth L., 4,263,239, Cl. 264-518.000.
Cox, D. Morley: *See*—
Wilson, Jonathan W.; Prescott, Billy H.; and Cox, D. Morley, 4,263,243, Cl. 264-137.000.
Cozens, Ross J.: *See*—
Jennings, James R.; Cozens, Ross J.; and Lalkham, Michael J., 4,263,224, Cl. 260-465.80D.
Cozzini, Artemio S. Welding guide. 4,263,497, Cl. 219-138.000.
CPC International Inc.: *See*—
Ushiro, Soichiro, 4,263,400, Cl. 435-177.000.
Cragoe, Edward J., Jr.: *See*—
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,263,207, Cl. 260-239.30T.
Crawford, Roger A.; and Golden, Hubert J., to PPG Industries, Inc. Soft-settling silica flatting agent. 4,263,051, Cl. 106-308.00Q.
Creger, Todd D.; Nelson, Steven R.; and Wright, Paul L., to Caterpillar Tractor Co. Tube expander and method. 4,262,518, Cl. 72-393.000.
Crompton & Knowles Corporation: *See*—
Faillace, Louie M., 4,262,737, Cl. 165-12.000.
Crotti, Aldo: *See*—
Grilli, Walter; Crotti, Aldo; and Manicardi, Emidio, 4,262,973, Cl. 305-54.000.
Crow, Morgan L., to Dresser Industries, Inc. Long-life milled tooth cutting structure. 4,262,761, Cl. 175-374.000.
Crowell Corporation, The: *See*—
Adelman, Herbert B., 4,263,360, Cl. 428-238.000.

Crownshaw, John C.: *See—*
Parfree, Colin S.; Gunn, Duncan A.; and Crownshaw, John C., 4,262,913, Cl. 277-1.000.
CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Bielli, Paolo; and De Padova, Salvatore, 4,263,599, Cl. 343-781.00R.
Cuatrecasas, Pedro: *See—*
Miller, Richard J.; Chang, Kwen-Jen; and Cuatrecasas, Pedro, 4,263,255, Cl. 422-61.000.
Cufaude, Marvin O.: *See—*
Turold, William E.; Cufaude, Marvin O.; Diaz, Frank A.; and Hanson, Robert A., 4,262,477, Cl. 56-327.00R.
Cullen, William P.: *See—*
Sung, Rodney L.; Bialy, Jerzy J.; Dorn, Peter; Cullen, William P.; and Nebzydoski, John W., 4,263,015, Cl. 44-63.000.
Cusset, Georges: *See—*
Pignan, Jean-Louis; and Cusset, Georges, 4,263,117, Cl. 204-230.000.
Custom Cable Company: *See—*
Moore, Boyd B.; and Kendall, Clarence E., Jr., 4,262,703, Cl. 138-115.000.
Daenen, Bernardus, to Van der Molen Machinefabrick B.V. Apparatus for processing strips cut from tobacco leaves. 4,262,683, Cl. 131-327.000.
Dagostino, Thomas P.; Miller, Bruce E.; and Navarro, Luis J., to Tektronix, Inc. Display interpolator employing a transversal filter for a digital oscilloscope. 4,263,593, Cl. 340-728.000.
Dainippon Ink and Chemicals Incorporated: *See—*
Sugimoto, Seiji; Ueda, Yoshio; and Somei, Kunio, 4,262,582, Cl. 493-25.000.
Dallaire, Raymond, to P.H.-Tech, Inc. Roller assembly for a sliding frame closure. 4,262,451, Cl. 49-425.000.
Dammar, Raymon H., to Possis Corporation. Method for winding armature cores. 4,262,852, Cl. 242-7.030.
Dammar, Raymon H., to Possis Corporation. Apparatus for winding armatures. 4,262,853, Cl. 242-7.05B.
Dang, Xuong K.: *See—*
Bingham, John A. C.; and Dang, Xuong K., 4,263,673, Cl. 375-117.000.
Danko, Oliver L.; Steiss, William C.; Amor, William H., Jr.; Tobbe, William P.; Gardner, Thomas J.; and Shufflebarger, Earl D., to Nupro Company. Plug valve. 4,262,880, Cl. 251-288.000.
Danneberg, Peter: *See—*
Weber, Karl H.; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,263,310, Cl. 424-269.000.
Dare Products, Inc.: *See—*
Wilson, Robert M., Sr., 4,263,477, Cl. 174-158.00F.
Darmstadt, Robert M.; and Darmstadt, Robert W. Pneumatic structures. 4,262,457, Cl. 52-2.000.
Darmstadt, Robert W.: *See—*
Darmstadt, Robert M.; and Darmstadt, Robert W., 4,262,457, Cl. 52-2.000.
Darnell, Eula K. Word building teaching aid. 4,262,431, Cl. 434-170.000.
Datta, Pabitra; and Desai, Nitin V., to RCA Corporation. Method for the manufacture of multi-color microlithographic displays. 4,263,386, Cl. 430-25.000.
Dauvergne, Hector A.; and Moore, C. William. Free-expansion boiler with replaceable heat exchanger tubes. 4,262,635, Cl. 122-235.00C.
Davey, John E.: *See—*
Christou, Aristos; and Davey, John E., 4,263,605, Cl. 357-65.000.
Davidson, Charlton R. Thermal shield with lock mechanism. 4,262,508, Cl. 70-455.000.
Davies, Robert W., to Molins Limited. Distributing streams of articles. 4,262,792, Cl. 198-348.000.
Davis, Allen V. C. Air valve and pressure responsive actuator. 4,262,697, Cl. 137-625.500.
Davis, James A.: *See—*
Wagner, William E.; and Davis, James A., 4,263,335, Cl. 427-29.000.
Davis, Marshall E.; and Dille, Kenneth L., to Texaco Inc. Anti-rust fuel composition. 4,263,014, Cl. 44-63.000.
Davy International Aktiengesellschaft: *See—*
Keunecke, Gerhard; Klopfer, Anton; Krimphove, Herbert; and Sterck, Lothar, 4,263,211, Cl. 260-346.760.
Davydov, Anatoly B.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A., 4,263,185, Cl. 260-17.40R.
De Lorean Manufacturing Company: *See—*
Kraus, Peter B., 4,262,764, Cl. 180-9.480.
Dean, Geoffrey J.: *See—*
McConnellogue, Neal J.; and Dean, Geoffrey J., 4,262,629, Cl. 118-668.000.
Dean, Roy D., to Boeing Company, The. Three-position variable camber flap. 4,262,868, Cl. 244-214.000.
Debat, Jacques; Lemoine, Jean; and Longuet, Monique, to Societe Anonyme dite: Laboratoire Debat. Globularia extract, its method of preparation and its use as pharmaceutical. 4,263,285, Cl. 424-195.000.
Debs, Victor, to Levolor Lorentzen, Inc. Vertical blind. 4,262,728, Cl. 160-168.00R.
DeCoster, David C.: *See—*
Tu, Hosheng; and DeCoster, David C., 4,263,174, Cl. 252-455.00Z.
de Echeandia, Rafael A.; and Hutcheson, James L., to Reynolds Metals Company. Method and apparatus for treating flexible containers. 4,262,708, Cl. 141-7.000.
Deflandre, Jean: *See—*
Courrege, Philippe; Deflandre, Jean; and Valette, Francois, 4,262,735, Cl. 165-4.000.
De Fonzo, Alfred P.; and Giallorenzi, Thomas G., to United States of America, Navy. Optical phase shifter. 4,263,570, Cl. 333-157.000.
DeGeus, Arie M. Rotating heat pipe solar power generator. 4,262,483, Cl. 60-641.000.
De Groff, James T.: *See—*
Feldman, Martin L.; and De Groff, James T., 4,263,198, Cl. 260-40.00R.
Degussa Aktiengesellschaft: *See—*
Engel, Jurgen; Kleemann, Axel; Tuckermann, Ute-Achterrath; and Thiemer, Klaus, 4,263,308, Cl. 424-267.000.
Dejneka, Tamara: *See—*
Sundeen, Joseph E.; and Dejneka, Tamara, 4,263,293, Cl. 424-248.500.
Delamere & Williams Company, Limited: *See—*
Brooke, Arthur A., 4,262,473, Cl. 53-450.000.
Delaporte, Francois: *See—*
Ballatore, Daniel; Delaporte, Francois; Lebesnerais, Gerard; and Nuez, Jean-Paul, 4,263,518, Cl. 307-303.000.
Delle-Alsthom: *See—*
Pham Van, Doan, 4,263,490, Cl. 200-144.0AP.
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., to Wisconsin Alumni Research Foundation. Fluorovitamin D compounds and processes for their preparation. 4,263,214, Cl. 260-397.200.
Delzenne, Gerard A.; and Kokelenberg, Hendrik E., to AGFA-GEVAERT N.V. High intensity photon-image recording. 4,263,395, Cl. 430-332.000.
Deman, Pierre, to Thomson-CSF. Apparatus for synchronization on the basis of a received digital signal. 4,263,672, Cl. 375-111.000.
De Mars, Jimmy A.: *See—*
Johnson, Ralph F.; and De Mars, Jimmy A., 4,263,103, Cl. 203-88.000.
DeMasi, Gordon A.; and Staats, Richard A., to Bethlehem Steel Corporation. Ladle shroud apparatus. 4,262,827, Cl. 222-607.000.
De Nigris, Frank: *See—*
Dinan, James M.; and De Nigris, Frank, 4,262,439, Cl. 40-607.000.
Denning, David B.: *See—*
Allen, Thomas C.; and Denning, David B., 4,263,244, Cl. 264-168.000.
Dennis, Stephan, to Stauffer Chemical Company. Fenvalerate-phosmet insecticidal composition. 4,263,287, Cl. 424-200.000.
Denton, Mark S.: *See—*
Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., 4,263,406, Cl. 435-291.000.
De Padova, Salvatore: *See—*
Bielli, Paolo; and De Padova, Salvatore, 4,263,599, Cl. 343-781.00R.
Dependable-Fordath, Inc.: *See—*
Powers, Earl W., 4,262,730, Cl. 164-4.000.
de Rougemont, Christian, to Isomat. Sailing-boat mast. 4,262,616, Cl. 114-94.000.
Desai, Nitin V.: *See—*
Datta, Pabitra; and Desai, Nitin V., 4,263,386, Cl. 430-25.000.
DeSantis, Eugene. Cartridge pouch. 4,262,833, Cl. 224-239.000.
DeSoto, Inc.: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,263,189, Cl. 260-29.300.
Sekmakas, Kazys; and Shah, Raj, 4,263,192, Cl. 260-29.60E.
Dessauer, Guido: *See—*
Andersen, John V.; and Dessauer, Guido, 4,262,935, Cl. 282-27.500.
Deutsch, Jeffrey T. Apparatus and method for enhancement of optical images. 4,263,001, Cl. 355-45.000.
Deutsch, Stephen A.: *See—*
Stitzer, Phillip L.; and Deutsch, Stephen A., 4,262,847, Cl. 239-112.000.
de Vries, Jochem J.: *See—*
Van Hemmen, Dirk J.; Reinink, Jan; and de Vries, Jochem J., 4,262,416, Cl. 30-43.600.
deVries, Louis: *See—*
King, John M.; and deVries, Louis, 4,263,152, Cl. 252-46.400.
Dianov, Ivan M.: *See—*
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Diaz, Frank A.: *See—*
Turold, William E.; Cufaude, Marvin O.; Diaz, Frank A.; and Hanson, Robert A., 4,262,477, Cl. 56-327.00R.
Dictran International Corp.: *See—*
Ho, Charles W.; and Takahashi, Tohru, 4,263,481, Cl. 179-6.140.
Diederichs, Arthur, to Siemens Aktiengesellschaft. Electric two motor drive. 4,263,524, Cl. 310-112.000.
Diehl GmbH & Co.: *See—*
Arnold, Werner; and Neubauer, Josef, 4,263,590, Cl. 340-672.000.
Diesel Kiki Co., Ltd.: *See—*
Kato, Nobuhiro; and Ohtani, Masami, 4,262,738, Cl. 165-25.000.
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,262,645, Cl. 123-502.000.
Takefuta, Hideyasu; and Yamaguchi, Toshio, 4,262,787, Cl. 192-84.00T.

Diggens, Albert A.; and Ross, James W., Jr., to Orion Research Incorporated. Electrochemical monitoring. 4,263,104, Cl. 204-1.00T.

Dillahunty, Michael D.: *See—*
Mosely, Gordon P.; and Dillahunty, Michael D., 4,262,641, Cl. 123-335.000.

Dille, Kenneth L.: *See—*
Davis, Marshall E.; and Dille, Kenneth L., 4,263,014, Cl. 44-63.000.

Dimark, Inc.: *See—*
Bergan, Norman A., 4,262,559, Cl. 76-101.00A.

Dinaco, Inc.: *See—*
Dinan, James M.; and De Nigris, Frank, 4,262,439, Cl. 40-607.000.

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Dinsmore, Stanley R.: *See—*
Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., 4,263,406, Cl. 435-291.000.

Dobson, David J.: *See—*
Radvan, Bronislaw; and Dobson, David J., 4,263,344, Cl. 427-150.000.

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Pfeifer, Peter, 4,262,499, Cl. 64-27.00L.

Dr. Johannes Heidenhain GmbH: *See—*
Affa, Alfred, 4,262,423, Cl. 33-125.00A.

Doi, Hachiro: *See—*
Takahashi, Katsuhiko; Doi, Hachiro; and Yaegashi, Masayuki, 4,262,475, Cl. 56-16.600.

Dolby Laboratories Licensing Corporation: *See—*
Gundry, Kenneth J., 4,263,624, Cl. 360-25.000.

Dombroski, John R.: *See—*
Light, Ronald R.; Dombroski, John R.; and Hawkins, James M., 4,263,183, Cl. 260-17.00R.

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Empey, Richard A.; and Dominik, Jurgen G., 4,263,399, Cl. 435-104.000.

Donath, Wilm E.; and Hitchcock, Robert B., Sr., to International Business Machines Corporation. Method for determining the characteristics of a logic block graph diagram to provide an indication of path delays between the blocks. 4,263,651, Cl. 364-300.000.

Doran, Byron L.: *See—*
Becker, Joseph T.; Doran, Byron L.; and Perretti, Patrick J., 4,262,909, Cl. 273-323.000.

Dorey, Roger J., to United Glass Limited. Handling of hot articles. 4,263,035, Cl. 65-348.000.

Dorlars, Alfons: *See—*
Seng, Florin; Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, 4,263,435, Cl. 544-223.000.

Dorn, Peter: *See—*
Sung, Rodney L.; Bialy, Jerzy J.; Dorn, Peter; Cullen, William P.; and Nebzydoski, John W., 4,263,015, Cl. 44-63.000.

Dorr-Oliver Incorporated: *See—*
Jukkola, Walfred W., 4,263,262, Cl. 423-167.000.
Kos, Peter, 4,263,137, Cl. 210-800.000.

Dougherty, Steve J., to Union Carbide Corporation. Alcohol-rhodium separation process. 4,263,218, Cl. 260-450.000.

Dow Chemical Company, The: *See—*
Christensen, Marvin M., 4,263,121, Cl. 204-296.000.
Flagg, Edward E., 4,263,220, Cl. 260-453.0AL.
Little, John C.; and Youngson, Charles R., Jr., 4,263,269, Cl. 423-488.000.
Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,263,422, Cl. 526-97.000.
Matthews, Donald P.; Wagner, Eugene R.; and McDermott, Roger D., 4,263,320, Cl. 424-319.000.
Spatz, David M.; and Widner, Paul J., 4,263,295, Cl. 424-249.000.
Sutrina, Thomas A.; and Behr, R. Douglas, 4,263,079, Cl. 156-244.110.
Wirth, Louis F., Jr., 4,263,145, Cl. 210-675.000.
Woo, Edmund P., 4,263,209, Cl. 260-345.90R.

Downs, William; Pirsh, Edward A.; Stewart, Jack F.; and Strom, Stephen S., to Babcock & Wilcox Company, The. Gas-liquid contact system. 4,263,021, Cl. 55-73.000.

Doyle, Francis X.: *See—*
Menelly, Richard A.; and Doyle, Francis X., 4,263,349, Cl. 427-352.000.

Doyle, Melvin J., to Marvel Rack Manufacturing Co. Hose cutter. 4,262,570, Cl. 83-397.000.

Drabs, Henri J. J., to Elbicon Electronics PVBA. Automatic detection and rejection of foreign bodies from vegetables transported on a conveyor. 4,262,806, Cl. 209-577.000.

Dragerwerk Aktiengesellschaft: *See—*
Heim, Ulrich; and Albarda, Scato, 4,262,686, Cl. 137-7.000.
Mitter, Norbert, 4,263,558, Cl. 330-10.000.

Dranselka, Marvin A. Portable exercise device. 4,262,902, Cl. 272-132.000.

Draper, Charles W.; and Legatti, Raymond H., to Square D Company. Ground fault receptacle. 4,263,637, Cl. 361-45.000.

Drehman, Lewis E.; and Farha, Floyd E., Jr., to Phillips Petroleum Company. Catalytic reforming and hydrocracking of organic compounds employing promoted zinc titanate as the catalytic agent. 4,263,132, Cl. 208-134.000.

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Dresser Industries, Inc.: *See—*
Crow, Morgan L., 4,262,761, Cl. 175-374.000.
Fertl, Walter H.; and Welker, David W., 4,263,509, Cl. 250-255.000.
Young, James W.; and Schpok, Ricky K., 4,262,759, Cl. 175-227.000.

Dretzka, Robert G.; Holt, James L.; and Payne, Guy D., to Outboard Marine Corporation. Marine propulsion device including ignition interruption means to assist transmission shifting. 4,262,622, Cl. 440-1.000.

Dreyfus, Gerard: *See—*
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,263,589, Cl. 340-638.000.

Drutz, Alvin S.: *See—*
McKinnon, Eugene T.; and Drutz, Alvin S., 4,262,490, Cl. 62-132.000.

Dubberley, Charles A.: *See—*
Brandt, George W.; and Dubberley, Charles A., 4,263,540, Cl. 318-775.000.

Duda, Henry J. Storage partition. 4,262,955, Cl. 296-24.00R.

Dukes, Paul; and Youngpeter, Paul. Electrocoating apparatus. 4,262,628, Cl. 118-425.000.

Dumbovic, Steve, to Illinois Tool Works Inc. Keyboard with an externally programmable repeat rate and repeat delay rate counter. 4,263,582, Cl. 340-365.00S.

Dunbar, John H.; and Gray, Kenneth L., to Courtaulds Limited. Dry forming of fibrous material. 4,263,239, Cl. 264-518.000.

Dunbar, Roger H. Grain tower aeration structure. 4,262,584, Cl. 98-55.000.

Dunlop Limited: *See—*
Stone, James H.; and Stone, Stephen H., 4,262,910, Cl. 273-408.000.

Dunn, David S.: *See—*
Burke, Edward F., Jr.; and Dunn, David S., 4,263,632, Cl. 360-106.000.

Du Pont de Nemours, E. I., and Company: *See—*
Kitts, Earle L., Jr., 4,263,359, Cl. 428-195.000.
Schumacher, Frederick G.; and Yllo, Walter, 4,263,196, Cl. 260-33.6UA.

Duracell International Inc.: *See—*
Joshi, Ashok V.; and Liang, Charles C., 4,263,377, Cl. 429-50.000.

Durand, Lucien; and Aubert, Georges, to Agence Nationale de Valorisation de la Recherche (ANVAR). Apparatus for longitudinally cutting vertically suspended animal carcasses. 4,262,388, Cl. 17-52.000.

Durand-Wayland, Inc.: *See—*
Leverett, William H., 4,262,807, Cl. 209-592.000.

Durando, Pierre: *See—*
Joubert, Philippe; Loupias, Michel; and Durando, Pierre, 4,263,004, Cl. 405-172.000.

Dutton, Daniel R.: *See—*
Login, Robert B.; and Dutton, Daniel R., 4,263,094, Cl. 162-164.00R.

Dwyer, Thomas L. Tandem implement hitch. 4,262,921, Cl. 280-411.00C.

Dyball, Christopher J., to Pennwalt Corporation. Polyester compositions containing crosslinkable copolymers. 4,263,417, Cl. 525-169.000.

Dzus Fastener Co., Inc.: *See—*
Wright, Andrew C. W., 4,262,394, Cl. 24-73.0RM.

E. R. Squibb & Sons, Inc.: *See—*
Sundeen, Joseph E.; and Dejneka, Tamara, 4,263,293, Cl. 424-248.500.

E. Sachs & Co. Ltd.: *See—*
Hallam, Dennis M., 4,262,459, Cl. 52-11.000.

Early, Robert M.: *See—*
Schnabel, Wilhelm J.; and Early, Robert M., 4,263,221, Cl. 260-453.0AM.

Earth Sciences, Inc.: *See—*
Symens, Raymond D.; and Rickard, Robert S., 4,263,148, Cl. 210-705.000.

Eastman Kodak Company: *See—*
Chen, Chin H., 4,263,393, Cl. 430-218.000.
Huguenard, Albert P.; and Favre, Michel J., 4,263,011, Cl. 23-300.000.
Kim, Sang H., 4,263,343, Cl. 427-125.000.
Light, Ronald R.; Dombroski, John R.; and Hawkins, James M., 4,263,183, Cl. 260-17.00R.
Seymour, Robert W.; Weaver, James C.; and Wright, Benny W., 4,263,364, Cl. 428-287.000.
Woo, Nea-Yea; and Edwards, Evan A., 4,263,623, Cl. 360-10.000.

Eaton Corporation: *See—*
Clark, David P., 4,262,640, Cl. 123-198.00F.
Collins, Marcus H., 4,262,789, Cl. 192-113.00B.
Houseman, Henry J.; and McPherson, John S., 4,262,958, Cl. 296-65.00R.

Eberle, William J.: *See—*
Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,263,379, Cl. 429-179.000.

Eberly, Paul E., Jr., to Exxon Research & Engineering Co. Removal of sulfur from process streams. 4,263,020, Cl. 55-62.000.

Ebert, Lawrence B.; and Matty, Louis, Jr., to Exxon Research & Engineering Co. Anionic grafts of monomers onto coal substrates. 4,263,123, Cl. 208-8.0LE.

Ebner, Heinrich; Faust, Uwe; and Sittig, Wolfgang, to Uhde GmbH. Process and apparatus for dispersing gas in a liquid. 4,263,143, Cl. 210-629.000.

Echard, Alain: *See—*
Ferrand, Henri; and Echard, Alain, 4,262,650, Cl. 125-15.000.

Echlin Manufacturing Company, The: *See*—
Wiegand, John R., 4,263,523, Cl. 307-419.000.

Echternach, Gerald G.: *See*—
Rentmeester, Kenneth R.; Eike, Eugene F.; Echternach, Gerald G.; and Stukas, Leo A., 4,263,338, Cl. 427-55.000.

Eck, Herbert; Kirst, Paul-Gerhard; and Lechner, Wilhelm, to Wacker-Chemie GmbH. Additive composition used in the preparation of low air pore, plastic containing, hydraulically-setting binders. 4,263,191, Cl. 260-29.60S.

Eckert, Konrad: *See*—
Holzbaur, Siegfried; and Eckert, Konrad, 4,263,235, Cl. 261-89.000.

Eckert, Manfred: *See*—
Gronert, Heinz; Vetter, Jochen; and Eckert, Manfred, 4,262,840, Cl. 233-1.00R.

Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, to Kali-Chemie Pharma GmbH. Topical pharmaceutical formulations, carrier compositions therefor, and preparation thereof. 4,263,313, Cl. 4245273 P-.

Edleanu GmbH: *See*—
Schorr, Victor; and Wirtz, Gerhard, 4,263,102, Cl. 203-22.000.

Edwards, Donald W.; Zukovich, Thomas M.; Thomas, Ronald D.; and Weigel, Ronald M., to International Minerals & Chemical Corp. TL-166 Blasting agent. 4,263,068, Cl. 149-2.000.

Edwards, Evan A.: *See*—
Woo, Nea-Yea; and Edwards, Evan A., 4,263,623, Cl. 360-10.000.

Edwards, John A., to Syntex Inc. Thio etianic acid derivatives. 4,263,289, Cl. 424-238.000.

Egami, Masashi, to Takachiho Chemical Industrial Co., Ltd. Process for charging and mixing standard gas mixture. 4,262,713, Cl. 141-9.000.

Egan, Richard R.; and Watts, Michelle M., to Sherex Chemical Company, Inc. Amine oxide foam stabilizers for alkyl benzene sulfonate foaming agents. 4,263,177, Cl. 252-547.000.

Eichin, Harry P.: *See*—
Nausedas, Joseph A.; and Eichin, Harry P., 4,262,803, Cl. 206-554.000.

Eickemeyer, Daniel B.: *See*—
Rausch, Maurice K.; Eickemeyer, Daniel B.; and Tollefsen, Gerald E., 4,263,127, Cl. 208-58.000.

Eike, Eugene F.: *See*—
Rentmeester, Kenneth R.; Eike, Eugene F.; Echternach, Gerald G.; and Stukas, Leo A., 4,263,338, Cl. 427-55.000.

Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., to Lummus Industries, Inc. Roller gin and feed system incorporating the same. 4,262,390, Cl. 19-50.000.

Eisenwerk-Gesellschaft Maximilianshutte: *See*—
Weber, Frank; Jericho, Erwin; and Friedrichs, Werner, 4,262,516, Cl. 72-348.000.

Elam, Kenneth R. High pressure washer for mine equipment. 4,262,849, Cl. 239-175.000.

Elbicon Electronics PVBA: *See*—
Drabs, Henri J. J., 4,262,806, Cl. 209-577.000.

Electric Power Development Co. Ltd.: *See*—
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,262,850, Cl. 241-17.000.

Electric Power Research Institute: *See*—
Jamison, Thomas D.; and Radcliff, Frank T., 4,262,539, Cl. 73-622.000.
Netzel, Philip C., 4,263,476, Cl. 174-156.000.

Electrical Equipment, Inc.: *See*—
Welter, Clarence L.; and Riggens, Stephen R., 4,263,487, Cl. 200-48.0KB.

Elford, Howard L.: *See*—
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,263,322, Cl. 424-324.000.

Ellingson, Robert M., to Paper Converting Machine Company. Lateral shifting device for crane. 4,262,950, Cl. 294-67.0AA.

Elliott, Guy R. B.; Vanderborgh, Nicholas E.; and McDaniel, Milton W. In situ recovery of gaseous hydrocarbons and steam. 4,262,747, Cl. 166-305.00R.

Elliott, Michael T.: *See*—
Glass, Howard L.; Elliott, Michael T.; and Henry, Rodney D., 4,263,374, Cl. 428-693.000.

Ellis, Jon P. Tape product for forming indicia, and process and apparatus for producing same, and products produced using such tape product. 4,263,085, Cl. 156-542.000.

Elrod, Samuel D., to Boeing Company, The. Superplastically formed titanium structure. 4,263,375, Cl. 428-594.000.

Emerson Electric Co.: *See*—
Freund, William R., Jr.; and Grebe, John C., Jr., 4,262,542, Cl. 73-861.120.
Grebe, John C., Jr.; and Freund, William R., Jr., 4,262,543, Cl. 73-861.170.

Emi, Toshihiko: *See*—
Haida, Osamu; Emi, Toshihiko; Yamada, Sumio; Sudo, Fumio; and Sonoda, Hiraku, 4,263,043, Cl. 75-58.000.

Emme, Harry W., to Hunt, Clifton T. Method and means for disposing of animal waste. 4,262,948, Cl. 294-1.0BB.

Emmons, William D.; and Sperry, Peter R., to Rohm and Haas Company. Method of coating and/or impregnating porous substrates, and products obtained thereby. 4,263,372, Cl. 428-446.000.

Empey, Richard A.; and Dominik, Jurgen G., to Merck & Co., Inc. High phosphate process for making low calcium, smooth flow xanthan gum. 4,263,399, Cl. 435-104.000.

Engel, John F., to FMC Corporation. 4-Substituted-2-indanol insecticidal ester derivatives. 4,263,319, Cl. 424-305.000.

Engel, Jurgen; Kleemann, Axel; Tuckermann, Ute-Achterrath; and Thiemer, Klaus, to Degussa Aktiengesellschaft. N-Alkoxy-dithienylpiperidines, pharmaceutical compositions thereof and methods of use thereof. 4,263,308, Cl. 424-267.000.

Engelhard Minerals & Chemicals Corporation: *See*—
Bartholic, David B., 4,263,128, Cl. 208-91.000.

Ensmann, Burt W.: *See*—
Cooper, Julius; and Ensmann, Burt W., 4,262,444, Cl. 46-119.000.

Entech Corporation: *See*—
McConnellogue, Neal J.; and Dean, Geoffrey J., 4,262,629, Cl. 118-668.000.

Entek Corporation: *See*—
Adams, Ladd M., 4,263,166, Cl. 252-359.00E.

Epstein, Howard C., to Hewlett-Packard Company. Pulse generating apparatus. 4,263,506, Cl. 250-231.0SE.

Epstein, Joseph; and Bodor, Nicholas S., to Interx Research Corporation. Novel pyridiniumaldoximes having micellar characteristics. 4,263,305, Cl. 424-263.000.

Erdman, Gerald D.: *See*—
Vander Velden, Edward L.; and Erdman, Gerald D., 4,263,024, Cl. 55-122.000.

Erlich, Giora. Filter element. 4,263,139, Cl. 210-169.000.

Ernst, Alfred. Hardness testing apparatus provided with a safety stop device. 4,262,525, Cl. 73-81.000.

Escher Wyss Limited: *See*—
Miesch, Hans, 4,262,400, Cl. 29-116.0AD.
Miesch, Hans, 4,262,401, Cl. 29-116.0AD.

Eshoo, Fredrick. Solar balloon maneuvering system. 4,262,864, Cl. 244-31.000.

Espic, Luc: *See*—
Ramoni, Pierre; Espic, Luc; and Kurz, Wilfried, 4,262,732, Cl. 164-87.000.

Espinosa, Fidel. Sine bi-angle wheel dresser. 4,262,649, Cl. 125-11.00B.

Esposito, Chris. Solar climate control for greenhouses. 4,262,656, Cl. 126-430.000.

Essex Chemical Corporation: *See*—
Laauwe, Robert H., 4,262,802, Cl. 206-540.000.

Estradier, Francoise: *See*—
Bugaut, Andree; and Estradier, Francoise, 4,263,213, Cl. 260-347.700.

Ethyl Corporation: *See*—
Hayes, Thomas H., 4,262,819, Cl. 222-92.000.

Eugen Lutz GmbH & Co. Maschinenfabrik: *See*—
Bergler, Otto; and Lutz, Eugen, 4,262,421, Cl. 30-393.000.

Euteco S.p.A.: *See*—
Vargiu, Silvio; Paparatto, Pietro; and Parodi, Antonio, 4,263,195, Cl. 260-31.8XA.

Eutectic Corporation: *See*—
Patel, Mahesh S., 4,263,353, Cl. 427-423.000.

Evans, Robert F. Borehole angle control by gage corner removal from mechanical devices associated with drill bit and drill string. 4,262,758, Cl. 175-73.000.

Evans, Samuel: *See*—
Rasberger, Michael; Evans, Samuel; and Moser, Paul, 4,263,202, Cl. 260-45.75R.

Everett, Woodrow W. Bearing assemblies. 4,262,978, Cl. 308-36.100.

Exxon Production Research Company: *See*—
Stewart, Norman E., 4,262,745, Cl. 166-263.000.

Exxon Research & Engineering Co.: *See*—
Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., 4,263,173, Cl. 252-452.000.
Carter, James L.; Barnett, Allan E.; and Sinfelt, John H., 4,263,225, Cl. 564-422.000.
Eberly, Paul E., Jr., 4,263,020, Cl. 55-62.000.
Ebert, Lawrence B.; and Matty, Louis, Jr., 4,263,123, Cl. 208-8.0LE.
O'Halloran, Rosemary; and Winans, Esther D., 4,263,153, Cl. 252-475.000.
Ryer, Jack; Girgenti, Salvatore J.; and Winans, Esther D., 4,263,154, Cl. 252-47.500.
Young, Dale A., 4,262,712, Cl. 141-392.000.

Fabian, Wolfgang, to American Standard Inc. Sanitary fitting. 4,262,699, Cl. 137-801.000.

Facet Enterprises, Inc.: *See*—
Spencer, Andrew R., 4,262,770, Cl. 181-258.000.

Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., to Reagents of the University of California, The. N-alkoxy- and N-aryloxysulfinylcarbamate esters. 4,263,318, Cl. 424-282.000.

Faillace, Louie M., to Crompton & Knowles Corporation. Extruder temperature controller. 4,262,737, Cl. 165-12.000.

Fairweather, Michael J.: *See*—
Swinkels, Godefridus M.; Hirsch, Horst E.; Fairweather, Michael J.; and Parker, Ernest G., 4,263,109, Cl. 204-119.000.

Faisant, Gilles; and Reverdy, Gaston, to S I P A (Societe Industrielle des Plastiques de l'Atlantique). Modular elements forming by assembly a set of vertical or horizontal spaces in a single plane or offset planes. 4,262,467, Cl. 52-590.000.

Fajt, Jr.; Robert. Fireplace log guard. 4,262,651, Cl. 126-202.000.

Falk, Alfons B., to Aktiebolaget Hagglund & Soner. Crawler track for tracked vehicles. 4,262,972, Cl. 305-35.00R.

Fannin, Loyd W.: *See*—
Malpass, Dennis B.; and Fannin, Loyd W., 4,263,217, Cl. 260-448.00A.

Farha, Floyd E., Jr.: *See*—
Drehman, Lewis E.; and Farha, Floyd E., Jr., 4,263,132, Cl. 208-134.000.
Drehman, Lewis E.; Farha, Floyd E., Jr.; and Walker, Darrell W., 4,263,133, Cl. 208-134.000.
Farley, James R.: *See*—
Maier, Alfred E.; and Farley, James R., 4,263,492, Cl. 200-288.000.
Farnam, Robert G., to Colt Industries Operating Corp. Method of making vehicle bumper shims and articles produced thereby. 4,262,947, Cl. 293-1.000.
Fatuzzo, Carol L.; and Foss, George D., to Minnesota Mining and Manufacturing Company. Process for forming a high resolution X-ray intensifying screen with antireflecting substrate. 4,263,061, Cl. 148-6.300.
Faust, Reginald O. Safety device for use in bar bell exercises and the like. 4,262,901, Cl. 272-117.000.
Faust, Uwe: *See*—
Ebner, Heinrich; Faust, Uwe; and Sittig, Wolfgang, 4,263,143, Cl. 210-629.000.
Favre, Michel J.: *See*—
Huguenard, Albert P.; and Favre, Michel J., 4,263,011, Cl. 23-300.000.
Feeken, Ronald H. Fence construction for livestock. 4,262,883, Cl. 256-25.000.
Feiman, Vladimir; and Luksha, Eugene, to Cardiac Pacemakers, Inc. Primary battery using lithium anode and interhalogen cathode and electrolyte. 4,263,378, Cl. 429-105.000.
Felauer, Ethel E.: *See*—
Puttock, Michael A.; Felauer, Ethel E.; and Graham, Bruce A., 4,263,442, Cl. 549-14.000.
Felcht, Utz-Hellmuth, to Hoechst Aktiengesellschaft. Process for the manufacture of 3-acyl-2-alkyl- and 3-acyl-2-aryl-1,3,2-benzoxazaphospholanes. 4,263,231, Cl. 260-968.000.
Feldman, Martin L.; and De Groff, James T., to Tenneco Chemicals, Inc. Thickening agents for unsaturated polyester resin compositions. 4,263,198, Cl. 260-40.00R.
Feldmuhle Aktiengesellschaft: *See*—
Andersen, John V.; and Dessauer, Guido, 4,262,935, Cl. 282-27.500.
Felix, Pierre, to Thomson-CSF. Picture pickup target and reading device assembly. 4,263,620, Cl. 358-213.000.
Fenn, Gordon W., to Chrysler Corporation. Fuel preparation for internal combustion engines. 4,263,233, Cl. 261-78.00R.
Ferrand, Henri; and Echard, Alain, to Applications Industrielles du Diamant S.T.I. Triffus France. Expensive abrasive base cutting wheels with a metallic core notched at the periphery. 4,262,650, Cl. 125-15.000.
Ferrell, Robert A., to KCL Corporation. Method and apparatus for making printed gusset bags. 4,262,581, Cl. 493-188.000.
Ferrero, Giorgio, to Fiat Auto S.p.A. Reflector for lighting and/or indicator devices especially for vehicles. 4,263,641, Cl. 362-293.000.
Ferring Pharmaceuticals, Inc.: *See*—
Cort, Joseph H., 4,263,283, Cl. 424-177.000.
Ferrini, Pier G.; Goschke, Richard; Sallmann, Alfred; and Rossi, Alberto, to Ciba-Geigy Corporation. Novel 2-sulphonyl- (or -sulphinyl)-2'-aminoacetophenones. 4,263,455, Cl. 564-305.000.
Ferris, Michael J.; Schoenfield, Palmer J.; and Meyer, Burton C., to Marvin Glass & Associates. Pop-up whale. 4,262,443, Cl. 46-103.000.
Fertl, Walter H.; and Welker, David W., to Dresser Industries, Inc. Method for in situ determination of the cation exchange capacities of subsurface formations. 4,263,509, Cl. 250-255.000.
Fiat Auto S.p.A.: *See*—
Ferrero, Giorgio, 4,263,641, Cl. 362-293.000.
Fichte, Rudolf; Retelsdorf, Hans-Joachim; Jervis, Richard; and Radel, Gunter, to GfŒ Gesellschaft fur Elektrometallurgie mit beschrankter Haftung. Sinterable mass for producing workpieces of alloy steel. 4,263,046, Cl. 75-252.000.
Fields, John R.: *See*—
Siekanowicz, Wieslaw W.; and Fields, John R., 4,263,529, Cl. 313-422.000.
Fields, Larry D., to Yardney Electric Corporation. Valve. 4,262,698, Cl. 137-625.500.
Fields, Paul R.: *See*—
Gruen, Dieter M.; and Fields, Paul R., 4,262,739, Cl. 165-485.000.
Fifer, William J., to Ford Motor Company. Vehicle window assembly. 4,262,960, Cl. 296-84.00R.
Findeisen, Kurt: *See*—
Wagner, Kuno; and Findeisen, Kurt, 4,263,181, Cl. 260-9.000.
Fink, Hans-Ferdi: *See*—
Schmidt, Gunter; and Fink, Hans-Ferdi, 4,263,250, Cl. 264-338.000.
Fischer, Albert G., to Brown, Boveri & Cie Aktiengesellschaft. Process for the production of electroluminescent powders for display panels. 4,263,339, Cl. 427-64.000.
Fischer & Porter Co.: *See*—
Herzl, Peter J., 4,262,544, Cl. 73-861.240.
Fish, Leonard A., to Bank Computer Network Corporation. Elevator mechanism for automatic teller machine. 4,262,817, Cl. 221-130.000.
Fisons Limited: *See*—
Gates, Peter S.; Baldwin, Derek; Wilson, Carol A.; and Gillon, John, 4,263,037, Cl. 71-88.000.
Fitzpatrick, James E.: *See*—
Berger, Joseph C.; Fitzpatrick, James E.; and Whelan, James P., 4,263,247, Cl. 264-273.000.
Flack, Max L.; and Roos, William G., to Best Lock Corporation. Cylinder lock with hotel function. 4,262,507, Cl. 70-432.000.
Flagg, Edward E., to Dow Chemical Company, The. Alkylene dicyanates. 4,263,220, Cl. 260-453.0AL.
Flexco S.r.l.: *See*—
Bertin, Elio, 4,262,460, Cl. 52-64.000.
Flider, Frank S., to Justrite Manufacturing Company. Safety storage cabinet. 4,262,448, Cl. 49-367.000.
Flint, Theodore R. Hot-melt adhesive dispenser. 4,262,820, Cl. 222-146.00H.
Flodin, Larry M. Log sawing apparatus. 4,262,572, Cl. 83-471.200.
Floryan, Daniel E.: *See*—
Cooper, Glenn D.; and Floryan, Daniel E., 4,263,426, Cl. 528-486.000.
Fluid Coal Corporation: *See*—
Smith, George A., Sr., 4,263,013, Cl. 44-1.00B.
Flusin, Francois, to Ugine Aciers. High-absorption bumper device for vehicles. 4,262,778, Cl. 188-1.00C.
FMC Corporation: *See*—
Engel, John F., 4,263,319, Cl. 424-305.000.
McGinley, Emanuel J., 4,263,334, Cl. 426-573.000.
Fofanova, Tatyana S.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.
Fondronnier, Jacques; and Guillerm, Jean, to Centre Technique du Bois. Device for continuously and rotatably cutting a sheet transversely with respect to its direction of advance. 4,262,566, Cl. 83-116.000.
Fontaine, Jean-Claude, to Lucien Ferraz & Cie. Fuse cartridges. 4,263,575, Cl. 337-241.000.
Foolen, Johannes A., to Single Buoy Moorings, Inc. Buoy including a mooring device. 4,262,380, Cl. 9-8.00P.
Ford Aerospace & Communications Corp.: *See*—
Ho, Pang T., 4,263,559, Cl. 330-53.000.
Ford Motor Company: *See*—
Fifer, William J., 4,262,960, Cl. 296-84.00R.
Moore, Charles D., 4,262,889, Cl. 267-140.500.
Petersen, Larry D.; and Squires, Stanley C., 4,262,407, Cl. 29-460.000.
Strasser, Robert A.; and Case, Richard B., 4,262,931, Cl. 280-729.000.
Foresight Enterprises, Incorporated: *See*—
Berg, Bernard J.; and Thompson, Darrell T., 4,263,108, Cl. 204-109.000.
Formica Corporation: *See*—
Jaisle, Richard F.; and Schiermeier, Walter W., 4,263,073, Cl. 156-90.000.
Foss, George D.: *See*—
Fatuzzo, Carol L.; and Foss, George D., 4,263,061, Cl. 148-6.300.
Foster, R. Don: *See*—
Weeden, Frank G.; and Foster, R. Don, 4,263,237, Cl. 264-219.000.
Fournex, Robert: *See*—
Nedelec, Lucien; Torelli, Vesperto; and Fournex, Robert, 4,263,290, Cl. 424-243.000.
Fox, William R., to Allied Chemical Corporation. Passive seat belt system with dampening means. 4,262,933, Cl. 280-802.000.
Franke, Albrecht: *See*—
Hagen, Helmut; Thieme, Peter C.; and Franke, Albrecht, 4,263,430, Cl. 542-458.000.
Franke, Arne W. P.: *See*—
Jander, Dieter E.; and Franke, Arne W. P., 4,262,537, Cl. 73-490.000.
Franz, Helmut, to PPG Industries, Inc. Organotin treatment for reducing the reactivity of a glass surface. 4,263,371, Cl. 428-432.000.
Fraser, William J.; and Sweeny, Norman P., to Minnesota Mining and Manufacturing Company. Carbonless imaging system. 4,262,937, Cl. 282-27.500.
Frear, David L.: *See*—
Gallusser, David O.; Pfendler, Donald L.; Uhlig, Herbert K.; Frear, David L.; Hemmer, Valentine J.; and Toombs, Gary C., 4,262,987, Cl. 339-258.00R.
Fredrickson, Lloyd A.; and VanAusdall, James G., to Ceel-Co. Method of assembling strapping. 4,262,406, Cl. 29-433.000.
Frei, Arno, to Sulzer Brothers Limited. Method and apparatus for bending a tube. 4,262,515, Cl. 72-302.000.
Freitag, Herbert; and Schnitzius, Klaus, to Stabilus GmbH. Pneumatic spring including an electric switch. 4,263,488, Cl. 200-52.00R.
Fremion, Edwin A., to Westvaco Corporation. Multiple blank bottle carrier. 4,262,837, Cl. 229-23.00R.
Freund, Peter: *See*—
Rothe, Hans-Jochen; Freund, Peter; Gey, Werner; and Heinze, Helmut, 4,263,425, Cl. 528-309.000.
Freund, William R., Jr.; and Grebe, John C., Jr., to Emerson Electric Co. Family of magnetic flowmeters. 4,262,542, Cl. 73-861.120.
Freund, William R., Jr.: *See*—
Grebe, John C., Jr.; and Freund, William R., Jr., 4,262,543, Cl. 73-861.170.
Friedrichs, Werner: *See*—
Weber, Frank; Jericho, Erwin; and Friedrichs, Werner, 4,262,516, Cl. 72-348.000.
Frigerio, Giuliano E., to Lehner AG. Pharmaceutical composition of prolonged action containing bile acids. 4,263,272, Cl. 424-19.000.
Frissora, Joseph R., to Owens-Illinois, Inc. Drainable solar collector apparatus. 4,262,658, Cl. 126-443.000.
Fritz Eichenauer, Firma: *See*—
Bauchert, Jens; and Brechner, Ernst, 4,263,577, Cl. 338-242.000.

Frohnhaus, Reiner: *See—*
Bauer, Heinz; Gedig, Alfred; Frohnhaus, Reiner; Becker, Burckhard; Behrendt, Manfred; and Busch, Jurgen, 4,262,963, Cl. 297-473.000.

Frosch, Robert A.; and Aylward, John R. Cell and method for electrolysis of water and anode therefor. 4,263,112, Cl. 204-129.000.

Frost, Kenneth, to Chevron Research Company. Lubricant composition containing alkali metal borate and stabilizing oil-soluble acid. 4,263,155, Cl. 252-49.800.

Fu, Juian-Juian L.: *See—*
Laughlin, Robert G.; and Fu, Juian-Juian L., 4,263,281, Cl. 424-155.000.

Fuji Dia Co., Ltd.: *See—*
Shinozaki, Eiichi, 4,263,006, Cl. 425-78.000.

Fuji Electric Co., Ltd.: *See—*
Tamai, Mitsuru; and Yasuhara, Takeshi, 4,262,540, Cl. 73-718.000.

Fuji Photo Film Co., Ltd.: *See—*
Miyamoto, Akio, 4,262,936, Cl. 282-27.500.
Miyamoto, Akio; and Matsukawa, Hiroharu, 4,263,047, Cl. 106-21.000.

Fujimoto, Masaharu: *See—*
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, 4,263,432, Cl. 544-21.000.

Fujimoto, Yasuo; and Yamabe, Shigeru, to Nippon Chemiphar Co., Ltd. Acetic acid derivatives of 5,6-dihydrobenzo[b]pyrido[3,2-f]thiepine and oxepine. 4,263,437, Cl. 546-89.000.

Fujino, Takashi: *See—*
Yamanaka, Makoto; Kobayashi, Takehiko; and Fujino, Takashi, 4,263,050, Cl. 106-287.170.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, 4,263,291, Cl. 424-246.000.

Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, to Sumitomo Chemical Company, Limited. Production of substituted phenylurea. 4,263,219, Cl. 260-453.0RW.

Fujita, Hiroyuki; Suzaki, Yasuzi; and Tachibana, Atsushi, to Hitachi, Ltd. Method of splicing optical fibers by CO_2-laser. 4,263,495, Cl. 219-121.0LD.

Fujita, Takayuki, to Canon Kabushiki Kaisha. Electronic apparatus capable of storing operational sequence. 4,263,658, Cl. 364-709.000.

Fujitsu Limited: *See—*
Tanabe, Kaoru; Nomura, Yoshifumi; Maeda, Mamoru; and Takagi, Mikio, 4,263,087, Cl. 156-613.000.

Fujiwara, Sigeharu: *See—*
Mayumi, Masakatu; Mitooka, Kenji; Fujiwara, Sigeharu; and Okuyama, Takesi, 4,263,249, Cl. 264-334.000.

Fukuhara, Takao; and Saito, Kunihiro, to Nissan Motor Company, Limited. Belt drive connection malfunction sensor. 4,263,578, Cl. 340-52? 00R.

Fukuto, Tetsuo R.: *See—*
Fahmy, Mohamed A. H.; and Fukuto, Tetsuo R., 4,263,318, Cl. 424-282.000.

Fukuzaki, Takaharu; and Kimura, Toshio, to Hitachi, Ltd. System for determining the normal operating value of power plant data. 4,263,654, Cl. 364-504.000.

Funkhouser, William A., to Albany International Corp. Method for the distribution of biologically active chemicals. 4,262,846, Cl. 239-1.000.

Fuso Keigokin Co., Ltd.: *See—*
Takahashi, Katsuhiko; Doi, Hachiro; and Yaegashi, Masayuki, 4,262,475, Cl. 56-16.600.

G.D.I. Electronics: *See—*
Watts, Gary P., 4,263,665, Cl. 367-94.000.

GAF Corporation: *See—*
Lorenz, Donald H.; and Gruber, Bruce A., 4,263,366, Cl. 428-332.000.

Gagliardi, George N.; and Levy, Stephen D. Process for deodorizing aqueous effluent derived from the manufacture of organic chemicals. 4,263,136, Cl. 210-759.000.

Gakken Co., Ltd.: *See—*
Hachimura, Fukuji, 4,262,432, Cl. 434-161.000.

Galexie Manufacturing Pty. Limited: *See—*
Stanley, Louis, 4,262,818, Cl. 221-296.000.

Gallusser, David O.; Pfendler, Donald L.; Uhlig, Herbert K.; Frear, David L.; Hemmer, Valentine J.; and Toombs, Gary C., to Bendix Corporation, The. Electrical connector. 4,262,987, Cl. 339-258.00R.

Gardner, Hugh C.; and Cotter, Robert J., to Union Carbide Corporation. Half esters of organic polyols and a process for their production. 4,263,413, Cl. 525-34.000.

Gardner, Thomas J.: *See—*
Danko, Oliver L.; Steiss, William C.; Amor, William H., Jr.; Tobbe, William P.; Gardner, Thomas J.; and Shufflebarger, Earl D., 4,262,880, Cl. 251-288.000.

Garfinkel, Marvin: *See—*
Brown, Dale M.; and Garfinkel, Marvin, 4,263,058, Cl. 148-6.000.

Garner, Peter: *See—*
Logan, Maurus C.; Garner, Peter; and Stancati, Nicholas T., 4,262,417, Cl. 30-140.000.

Gartner, Hans: *See—*
Sistermann, Klaus; and Gartner, Hans, 4,263,034, Cl. 65-6.000.

Garvey, Joseph F.: *See—*
Wegener, John A.; and Garvey, Joseph F., 4,262,648, Cl. 124-6.000.

Gates, Allen P.; Hinch, Stephen C.; and Withers, Christopher V., to Vickers Limited. Aqueous alkaline soluble photopolymerizable material. 4,263,394, Cl. 430-287.000.

Gates, Peter S.; Baldwin, Derek; Wilson, Carol A.; and Gillon, John, to Fisons Limited. 5-Cyano-2,3-dihydrobenzofurans useful as herbicides. 4,263,037, Cl. 71-88.000.

Gaucher, Antoine; and Zabinski, Bernard, to Centre Stephanois de Recherches Mecanique Hydromecanique et Frottement. Method for treating parts made of titanium or titanium alloy, and parts produced thereby. 4,263,060, Cl. 148-6.300.

Gautier, Alain L., to Oldham France S.A. Helmet-carried apparatus for detecting and signalling the presence of a dangerous gas in an atmosphere. 4,263,588, Cl. 340-632.000.

Gavens, Paul D.: *See—*
Rochefort, Malcolm P.; and Gavens, Paul D., 4,263,168, Cl. 252-429.00B.

Gebhardt, Robert G. Apparatus for embossing and printing information on charge sales slip. 4,262,589, Cl. 101-45.000.

Gebruder Junghans GmbH: *See—*
Wolber, Robert; Maurer, Roland; and Jesse, Peter, 4,263,667, Cl. 368-300.000.

Gedeon, Roy M.: *See—*
Brown, Vaikai K.; Gedeon, Roy M.; and Ping, David T., 4,262,766, Cl. 180-75.000.

Gedig, Alfred: *See—*
Bauer, Heinz; Gedig, Alfred; Frohnhaus, Reiner; Becker, Burckhard; Behrendt, Manfred; and Busch, Jurgen, 4,262,963, Cl. 297-473.000.

General Atomic Company: *See—*
Ohkawa, Tihiro, 4,263,097, Cl. 176-5.000.

General Battery Corporation: *See—*
Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,263,379, Cl. 429-179.000.

General Electric Company: *See—*
Beatty, Brent A., 4,263,646, Cl. 363-58.000.
Brandt, George W.; and Dubberley, Charles A., 4,263,540, Cl. 318-775.000.
Brown, Dale M.; and Garfinkel, Marvin, 4,263,058, Cl. 148-6.000.
Butler, Walter J.; and Milkovic, Miran, 4,262,532, Cl. 73-345.000.
Cady, William R., 4,262,399, Cl. 29-25.420.
Ching, Ta-Yen, 4,263,222, Cl. 260-463.000.
Ciccarelli, Michael F.; and Goehner, Raymond P., 4,263,510, Cl. 250-272.000.
Cooper, Glenn D.; and Floryan, Daniel E., 4,263,426, Cl. 528-486.000.
Jarvinen, Willard B., 4,263,557, Cl. 318-341.000.
Liberti, Frank N., 4,263,409, Cl. 521-81.000.
Liebermann, Howard H., 4,262,734, Cl. 164-423.000.
Liu, Ping Y., 4,263,415, Cl. 525-148.000.
Liu, Ping Y.; and Goedde, Edwin J., 4,263,416, Cl. 525-148.000.
Mark, Victor; Webb, Jimmy L.; and Williams, Joseph B., 4,263,201, Cl. 260-45.70S.
McNeal, Walter P., 4,263,475, Cl. 174-138.00E.
Morton, James W., 4,262,413, Cl. 29-605.000.
Sabato, Joseph G., 4,262,425, Cl. 33-178.00R.
Skinner, David R.; Bethel, Lawrence L.; and Clemens, Ralph S., 4,262,705, Cl. 138-149.000.
Sugalski, Raymond K., 4,262,414, Cl. 29-623.200.
Watrous, Donald L.; Jones, Dwight V.; and McArthur, Raymond J., 4,263,543, Cl. 322-8.000.

General Foods Corporation: *See—*
Maing, Il Y.; and Miller, Irene, 4,263,333, Cl. 426-540.000.
Parada, Maya; and Rudolph, Marvin J., 4,263,328, Cl. 426-103.000.

General Tire & Rubber Company, The: *See—*
Rodenkirch, Bruce L., 4,262,725, Cl. 152-354.00R.

George, James P.: *See—*
Gregory, William D.; Capots, Larry H.; George, James P.; and Janik, Richard, 4,263,551, Cl. 324-233.000.

George, Paul R., to Cego, Inc. Oil reclaimer and muffler assembly and system. 4,263,029, Cl. 55-398.000.

George, William C.: *See—*
Burg, Raymond H.; Lohmann, Arthur M.; and George, William C., 4,262,598, Cl. 102-246.000.

Georgetown University: *See—*
Gregory, William D.; Capots, Larry H.; George, James P.; and Janik, Richard, 4,263,551, Cl. 324-233.000.

Gergis, Isoris S.: *See—*
Chen, Thomas T.; and Gergis, Isoris S., 4,263,661, Cl. 365-15.000.

Gerkens, Roger: *See—*
Godfroid, Marcel; and Gerkens, Roger, 4,263,464, Cl. 570-109.000.

Gernot Dittberner: *See—*
Tolkiehn, Ulrich; and Wustefeld, Uwe, 4,262,621, Cl. 114-245.000.

Gerquest, Arthur S. System for measuring oil consumption. 4,262,530, Cl. 73-861.800.

Gey, Werner: *See—*
Rothe, Hans-Jochen; Freund, Peter; Gey, Werner; and Heinze, Helmut, 4,263,425, Cl. 528-309.000.

GfE Gesellschaft fur Elektrometallurgie mit beschrankter Haftung: *See—*
Fichte, Rudolf; Retelsdorf, Hans-Joachim; Jervis, Richard; and Radel, Gunter, 4,263,046, Cl. 75-252.000.

Giacino, Christopher: *See—*
Withycombe, Donald A.; Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; and Giacino, Christopher, 4,263,332, Cl. 426-535.000.

Giallorenzi, Thomas G.: *See—*
De Fonzo, Alfred P.; and Giallorenzi, Thomas G., 4,263,570, Cl. 333-157.000.

Giambalvo, Melcheore F., to Weaver, George D.; and Weaver, Scott S., a part interest to each. Contact lens cleaning and rinsing method. 4,263,054, Cl. 134-21.000.

Gibson, Walter G.; Liu, Frank C.; and Muterspaugh, Max W., to RCA Corporation. Television signal processing system. 4,263,611, Cl. 358-23.000.

Gibson, Walter G.; and Thompson, Roger D., to RCA Corporation. Comb filter equalization circuit. 4,263,612, Cl. 358-31.000.

Giebeler, Bernhardt F., to Bernhardt & Frederick Co., Inc. Kelly valve. 4,262,693, Cl. 137-494.000.

Gilbert, Arthur E. Fishing reel spool. 4,262,857, Cl. 242-84.10A.

Gilbert, Mary T.: *See—*
Knox, John H.; and Gilbert, Mary T., 4,263,268, Cl. 423-449.000.

Gilch, Heinz G.: *See—*
Piestert, Gerhard; and Gilch, Heinz G., 4,263,419, Cl. 525-305.000.

Gilkeson, Robert F.; and Wiedersum, George C. Apparatus for heat pump malfunction detection. 4,262,736, Cl. 165-11.00R.

Gillette Company, The: *See—*
Guth, Jacob J., 4,263,178, Cl. 252-547.000.

Gillon, John: *See—*
Gates, Peter S.; Baldwin, Derek; Wilson, Carol A.; and Gillon, John, 4,263,037, Cl. 71-88.000.

Ginsberg, Allen; Huss, Martin F.; and Lynn, Joseph, to Pentagames, Inc. Game having a game board and components to be used therewith. 4,262,907, Cl. 273-249.000.

Girgenti, Salvatore J.: *See—*
Ryer, Jack; Girgenti, Salvatore J.; and Winans, Esther D., 4,263,154, Cl. 252-47.500.

Gladkov, Vladimir P.: *See—*
Zakurdaev, Anatoly V.; Vyzhimov, Vladimir I.; Gladkov, Vladimir P.; and Petrov, Valery I., 4,263,342, Cl. 427-123.000.

Glass, Howard L.; Elliott, Michael T.; and Henry, Rodney D., to Rockwell International Corporation. Temperature-stabilized low-loss ferrite films. 4,263,374, Cl. 428-693.000.

Glenn, Robert G., to Westinghouse Electric Corp. Double wall combustion chamber for a combustion turbine. 4,262,487, Cl. 60-757.000.

Glozbach, Peter: *See—*
Kasperek, Karl; and Glozbach, Peter, 4,263,098, Cl. 176-10.000.

Glyco-Metall-Werke Daelen & Loos GmbH: *See—*
Hodes, Erich; and Sternisa, Danilo, 4,263,361, Cl. 428-240.000.

Godare, William L., to W-K-M Wellhead Systems, Inc. Baffle plate for cyclone steam separator. 4,263,025, Cl. 55-185.000.

Godfroid, Marcel; and Gerkens, Roger, to Solvay & Cie. Stabilized compositions containing methylene chloride. 4,263,464, Cl. 570-109.000.

Godlewski, Czeslaw: *See—*
Leszczynska, Halina; Gulcz, Michal; Januszewski, Zdzislaw; Godlewski, Czeslaw; Gorczyca, Zdzislaw; and Janota, Norbert, 4,263,012, Cl. 23-313.0FB.

Godsen, Ronald: *See—*
Miller, Dye O.; and Godsen, Ronald, 4,262,586, Cl. 99-345.000.

Goedde, Edwin J.: *See—*
Liu, Ping Y.; and Goedde, Edwin J., 4,263,416, Cl. 525-148.000.

Goehner, Raymond P.: *See—*
Ciccarelli, Michael F.; and Goehner, Raymond P., 4,263,510, Cl. 250-272.000.

Goff, Raymon L.; and Rau, Jim L., to TRW Inc. Power steering system with auxiliary power capability. 4,262,580, Cl. 91-532.000.

Gofra Entwicklungsund Fertigungstechnik G.m.b.H.: *See—*
Kouth, Herbert, 4,262,782, Cl. 192-8.00R.

Golden, Hubert J.: *See—*
Crawford, Roger A.; and Golden, Hubert J., 4,263,051, Cl. 106-308.00Q.

Goldstein, Murray S., to Singer Company, The. Inertially decoupled strapdown system. 4,262,861, Cl. 244-3.200.

Gonner, Winfried, to Bodenseewerk Perkin-Elmer & Co. Apparatus for switching fluid flow. 4,262,879, Cl. 251-230.000.

Goodman, David S., to International Telephone and Telegraph Corporation. Printed circuit board connector. 4,262,981, Cl. 339-17.00C.

Goodyear Aerospace Corporation: *See—*
Phillips, Charles A.; Pitrone, John A.; and McGraw, Edward W., 4,262,378, Cl. 9-8.00R.

Goodyear Tire & Rubber Company, The: *See—*
Johnson, Ernest D.; and Braun, David L., 4,262,408, Cl. 29-507.000.
Rogers, Edward A., Jr., 4,263,456, Cl. 564-315.000.
Schleiger, Robert L., 4,263,083, Cl. 156-414.000.
Welter, Thomas N. H., 4,262,726, Cl. 152-361.00R.

Gorczyca, Zdzislaw: *See—*
Leszczynska, Halina; Gulcz, Michal; Januszewski, Zdzislaw; Godlewski, Czeslaw; Gorczyca, Zdzislaw; and Janota, Norbert, 4,263,012, Cl. 23-313.0FB.

Gorin, Georges J., to Motorola, Inc. Method for process control of a plasma reaction. 4,263,088, Cl. 156-626.000.

Gorsky, Egon; and Gorsky, William A. Percussion instrument striking apparatus. 4,262,576, Cl. 84-422.00R.

Gorsky, William A.: *See—*
Gorsky, Egon; and Gorsky, William A., 4,262,576, Cl. 84-422.00R.

Goschke, Richard: *See—*
Ferrini, Pier G.; Goschke, Richard; Sallmann, Alfred; and Rossi, Alberto, 4,263,455, Cl. 564-305.000.

Gosset, Philippe, to Thomson-CSF. Microwave delay line. 4,263,532, Cl. 315-3.500.

Goto, Akio: *See—*
Soeda, Yuji; and Goto, Akio, 4,262,472, Cl. 53-403.000.

Goto, Ryuji: *See—*
Yamashita, Keitaro; and Goto, Ryuji, 4,263,390, Cl. 430-125.000.

Gould Inc.: *See—*
Bernoteit, Kenneth G.; and Bourke, Robert F., 4,262,769, Cl. 180-323.000.

Graco, Inc.: *See—*
Vork, William D., 4,263,003, Cl. 366-348.000.

Graham, Anne M.: *See—*
Pesa, Frederick A.; and Graham, Anne M., 4,263,175, Cl. 252-473.000.

Graham, Bruce A.: *See—*
Puttock, Michael A.; Felauer, Ethel E.; and Graham, Bruce A., 4,263,442, Cl. 549-14.000.

Graham, William H.; and Shepard, Inella G., to Thiokol Corporation. Hydroxy terminated polybutadiene based polyurethane bound propellant grains. 4,263,444, Cl. 560-26.000.

Grange, Kenneth H.: *See—*
Binns, Julian R. H.; and Grange, Kenneth H., 4,262,884, Cl. 256-42.000.

Grant, Graham C. Ventilator for use in medical applications. 4,262,667, Cl. 128-204.210.

Graser, Fritz; and Guenthert, Paul, to BASF Aktiengesellschaft. Process for converting crude and/or coarsely crystalline perylenetetracarboxylic acid diimides to a pigmentary form. 4,262,851, Cl. 241-16.000.

Grawey, Charles E., to Caterpillar Tractor Co. High pressure reinforced hydraulic hose. 4,262,704, Cl. 138-130.000.

Gray, Joseph L., to Gray Manufacturing Co., Inc. Bottle jack anti-bind structure for rectangular lift post. 4,262,881, Cl. 254-93.00R.

Gray, Kenneth L.: *See—*
Dunbar, John H.; and Gray, Kenneth L., 4,263,239, Cl. 264-518.000.

Gray Manufacturing Co., Inc.: *See—*
Gray, Joseph L., 4,262,881, Cl. 254-93.00R.

Grear, Richard S., to Royal Industries, Inc. Tension failure trip for subsoil ripping shanks. 4,262,751, Cl. 172-271.000.

Grebe, John C., Jr.; and Freund, William R., Jr., to Emerson Electric Co. Magnetic flowmeter having multiple stage amplifier with automatic zeroing. 4,262,543, Cl. 73-861.170.

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Freund, William R., Jr.; and Grebe, John C., Jr., 4,262,542, Cl. 73-861.120.

Green, Eddie P. Auxiliary bunghole attachment. 4,262,826, Cl. 222-567.000.

Greene, Clarence A.: *See—*
Williams, Frederick C.; and Greene, Clarence A., 4,263,600, Cl. 343-854.000.

Greene & Kellogg: *See—*
McCombs, Norman R.; and Vrana, Edward E., 4,263,018, Cl. 55-18.000.

Gregory, William D.; Capots, Larry H.; George, James P.; and Janik, Richard, to Georgetown University. Method and apparatus for identifying conductive objects by monitoring the true resistive component of impedance change in a coil system caused by the object. 4,263,551, Cl. 324-233.000.

Grilli, Walter; Crotti, Aldo; and Manicardi, Emidio, to Ital-Tractor I.T.M. Junction link for endless chain tracks for tracked vehicles. 4,262,973, Cl. 305-54.000.

Grimes, Raymond L.: *See—*
Corgan, Donald M.; and Grimes, Raymond L., 4,263,579, Cl. 340-58.000.

Grimm, Thomas H.: *See—*
Smith, Jay, III; Hedgcoth, Virgile L.; and Grimm, Thomas H., 4,262,623, Cl. 118-31.500.

Grimpe, Karl, to Mannesmann Demag Ag. Overload control device between two revolving machine parts. 4,262,500, Cl. 64-28.00R.

Grob, Ferdinand; and Rabus, Friedrich, to Robert Bosch GmbH. Method and system for limiting the jolt during gear shifts in a motor vehicle. 4,262,557, Cl. 74-861.000.

Groendijk, Hendrik, to U.S. Philips Corporation. Reference voltage arrangement. 4,263,544, Cl. 323-313.000.

Groenendaal, Willem; and Harvey, Colin G., to Shell Oil Company. Process for working-up hydrogen sulphide-containing gases. 4,263,270, Cl. 423-573.00R.

Grogler, Gerhard: *See—*
Meyborg, Holger; Mormann, Werner; Grogler, Gerhard; and Schwindt, Jurgen, 4,263,408, Cl. 521-51.000.
Schwindt, Jurgen; Meyborg, Holger; Grogler, Gerhard; and Recker, Klaus, 4,263,423, Cl. 528-55.000.

Gronert, Heinz; Vetter, Jochen; and Eckert, Manfred, to Maschinenfabrik Augsburg-Nurnberg AG. Rotor for high operating speeds. 4,262,840, Cl. 233-1.00R.

Gross, Henry; and Gross, Samuel. Printing apparatus. 4,262,593, Cl. 101-99.000.

Gross, Samuel: *See—*
Gross, Henry; and Gross, Samuel, 4,262,593, Cl. 101-99.000.

Grothe, Klaus: *See—*
Korn, Hans; and Grothe, Klaus, 4,262,551, Cl. 74-552.000.

Grove, William S., to PPG Industries, Inc. Optionally substituted phenyl, and alkyl N-[5-(2-chloro-4-trifluoromethyl-6-optionally substituted phenoxy)-2-nitro, halo, or cyanobenzoyl]carbamates. 4,263,041, Cl. 71-108.000.

Grover, Donald D.; and Thompson, Jerome A., to Snap-On Tools Corporation. Self-adjusting engine timing pickup probe. 4,262,527, Cl. 73-116.000.

Grover, Thomas B.: *See—*
Grover, Thomas B., Jr.; Wiebush, Le Moey; and Anderson, David G., 4,262,842, Cl. 235-92.00T.

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Grow Group, Inc.: *See—*
Kaltenbach, Thomas F.; and Martyn, John G., 4,263,352, Cl. 427-379.000.
Gruber, Bruce A.: *See—*
Lorenz, Donald H.; and Gruber, Bruce A., 4,263,366, Cl. 428-332.000.
Gruber, Hermann: *See—*
Buysch, Hans-Josef; Gruber, Hermann; Wellner, Wolfgang; and Leiritz, Karl, 4,263,162, Cl. 252-182.000.
Gruen, Dieter M.; and Fields, Paul R., to United States of America, Energy. System for thermal energy storage, space heating and cooling and power conversion. 4,262,739, Cl. 165-485.000.
Gruppo Lepetit S.p.A.: *See—*
White, Richard J.; Lancini, Giancarlo; and Antonini, Piero, 4,263,404, Cl. 435-253.000.
GTE Automatic Electric Laboratories, Inc.: *See—*
Zellmer, Neale A., 4,263,644, Cl. 363-26.000.
Zellmer, Neale A., 4,263,645, Cl. 363-49.000.
Guenard, Pierre, to Thomson-CSF. Backward wave oscillator tube utilizing successive delay line sections for increased power. 4,263,566, Cl. 331-82.000.
Guenthert, Paul: *See—*
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Guhde, Donald J.; and Burdt, Dale M., to Rohco, Inc. Coating solutions of trivalent chromium for coating zinc and cadmium surfaces. 4,263,059, Cl. 148-6.200.
Guillerm, Jean: *See—*
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Gulf Research & Development Company: *See—*
Madgavkar, Ajay M.; and Bartek, Robert, 4,263,467, Cl. 585-525.000.
Schulz, Johann G. D.; and Onopchenko, Anatoli, 4,263,453, Cl. 562-543.000.
Gulinelli, Silvio: *See—*
Marconi, Walter; Bartoli, Francesco; Gulinelli, Silvio; Morisi, Franco; and Zaccardelli, Delio, 4,263,180, Cl. 260-8.000.
Gundry, Kenneth J., to Dolby Laboratories Licensing Corporation. Analog recording on magnetic media. 4,263,624, Cl. 360-25.000.
Gunn, Duncan A.: *See—*
Parfree, Colin S.; Gunn, Duncan A.; and Crownshaw, John C., 4,262,913, Cl. 277-1.000.
Gupta, Alankar; and Runnels, Joe N., to Boeing Company, The. Cabin-air recirculation system powered by cabin-to-ambient pressure differential. 4,262,495, Cl. 62-402.000.
Guschin, Alexandr E.: *See—*
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.
Guth, Jacob J., to Gillette Company, The. Hair shampoo composition. 4,263,178, Cl. 252-547.000.
H. B. Fuller Company: *See—*
Wilson, Clark M.; and Barrett, Robert B., 4,262,776, Cl. 184-15.00R.
H. H. Robertson Company: *See—*
Howell, Norbert C.; and Tischuk, Walter, 4,262,514, Cl. 72-55.000.
Haag, David R., to Champion-Edison, Inc. Web-splicing apparatus. 4,262,855, Cl. 242-58.100.
Haarmann & Reimer GmbH: *See—*
Bauer, Kurt; Hagena, Detlef; and Muller, Hans-Otto, 4,263,459, Cl. 568-448.000.
Haass, Adolf, to Siemens Aktiengesellschaft. Method and circuit arrangement for full duplex two-wire transmission of a ternary data signal. 4,263,668, Cl. 370-24.000.
Hachimura, Fukuji, to Gakken Co., Ltd. Study device. 4,262,432, Cl. 434-161.000.
Hacker, Dennis J., to High Efficiency Insulation Technologies, Inc. Self-hardening composition and composite therefrom. 4,263,048, Cl. 106-84.000.
Hadeishi, Tetsuo. Magnetically contained arc discharge lamp with crossed electric and magnetic fields. 4,263,533, Cl. 315-111.900.
Haft, Gerald; and Scharpf, Otto H., to Outboard Marine Corporation. Flywheel overbalance. 4,262,548, Cl. 74-44.000.
Hagen, Helmut; Thieme, Peter C.; and Franke, Albrecht, to BASF Aktiengesellschaft. 2-Methyl-5-(2-hydroxystyryl)-1,3,4-thiadiazole. 4,263,430, Cl. 542-458.000.
Hagena, Detlef: *See—*
Bauer, Kurt; Hagena, Detlef; and Muller, Hans-Otto, 4,263,459, Cl. 568-448.000.
Hagg, Vernon A.; and Trask, Phillip W. Sole body for footwear. 4,262,433, Cl. 36-25.00R.
Hahn, Kurt L.: *See—*
Allen, Robert J.; and Hahn, Kurt L., 4,262,510, Cl. 72-12.000.
Haida, Osamu; Emi, Toshihiko; Yamada, Sumio; Sudo, Fumio; and Sonoda, Hiraku, to Kawasaki Steel Corporation. Desulfurizing agent for injection. 4,263,043, Cl. 75-58.000.
Halcon Research and Development Corp.: *See—*
Leacock, James, 4,263,448, Cl. 560-246.000.
White, John F., 4,263,443, Cl. 549-83.000.
Hall, Karlene E.: *See—*
Kita, Donald A.; and Hall, Karlene E., 4,263,402, Cl. 435-137.000.
Hallam, Dennis M., to E. Sachs & Co. Ltd. Roof gutter. 4,262,459, Cl. 52-11.000.
Halliburton Company: *See—*
Streich, Steven G., 4,262,702, Cl. 138-89.000.
Surjaatmadja, Jim B., 4,262,743, Cl. 166-91.000.
Hamano, Suenobu: *See—*
Mori, Teijiro; Wada, Yuichi; and Hamano, Suenobu, 4,263,574, Cl. 337-161.000.
Hamermesh, Charles L.: *See—*
Tung, Chiang-Ying M.; and Hamermesh, Charles L., 4,263,410, Cl. 521-106.000.
Hametta, Alan W.: *See—*
Cook, Kenneth M.; and Hametta, Alan W., 4,263,553, Cl. 324-327.000.
Hamkins, Clark J.: *See—*
Anderson, Larry B.; Hamkins, Clark J.; Petrak, Harry A.; and Schaefer, David V., 4,262,785, Cl. 192-35.000.
Hammett, Robert E., to Standard Oil Company (Indiana). Viscoelastic polymer bank with improved mobility control. 4,262,746, Cl. 166-273.000.
Hampton, George J.; and Maida, William F., to Verbatim Corporation. Aqueous coating composition and method. 4,263,188, Cl. 260-29.2TN.
Handte, Reinhard, to Hoechst Aktiengesellschaft. 2-Benzazolyl, 2-benzothiazolyl and 2-imidazolyl. 4,263,440, Cl. 548-165.000.
Haneishi, Kohei: *See—*
Morii, Kokichi; Shichijo, Hajime; and Haneishi, Kohei, 4,263,674, Cl. 455-175.000.
Hang, Eberhard; and Kastl, Matthias, to Constantin Hang GmbH & Co., Firma. Device for joining a suspension or fastening device with a folder or the like. 4,262,404, Cl. 29-243.530.
Hanke, Wolfgang, to Semperit Aktiengesellschaft. Tread for a pneumatic tire. 4,262,720, Cl. 152-209.00D.
Hannah, John, to Merck & Co., Inc. 3-N-Pyridinium nocardicin and antibiotic composition thereof. 4,263,306, Cl. 424-263.000.
Hansen, Karl E.; and Pedersen, Peder, to Rockwool International A/S. Fibre-reinforced product and method of preparing same. 4,263,049, Cl. 106-93.000.
Hanson, Robert A.: *See—*
Turold, William E.; Cufaude, Marvin O.; Diaz, Frank A.; and Hanson, Robert A., 4,262,477, Cl. 56-327.00R.
Hanton, John P.; and Leach, Harley A. Electronic livestock identification system. 4,262,632, Cl. 119-1.000.
Hapel, Joseph, to Bureau d'Etudes Techniques J. Hapel & Cie Ingenieurs Conseils Chillou. Pressed blocks for interlocked assembly. 4,262,463, Cl. 52-98.000.
Harada, Chikao: *See—*
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakumu, Tsunehito, 4,262,674, Cl. 128-680.000.
Harato, Takuo: *See—*
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,263,261, Cl. 423-121.000.
Harbert, Charles A.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,263,438, Cl. 546-216.000.
Hardinge Brothers, Inc.: *See—*
Brown, Ivan R.; and Lyon, Garnet R., 4,262,563, Cl. 82-36.00A.
Hari, Stefan, to Ciba-Geigy Corporation. Monoazo pigments derived from substituted aminothiophenes. 4,263,205, Cl. 260-152.000.
Harmon, Edward J.: *See—*
Orem, Donald E.; Holmes, Vernon P.; Bacsanyi, Thomas J.; and Harmon, Edward J., 4,262,536, Cl. 73-462.000.
Harmon, William A.: *See—*
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., 4,262,390, Cl. 19-50.000.
Harris, Marion K. Single acting steam engine. 4,262,579, Cl. 91-480.000.
Harrison, Charles W.: *See—*
Lynch, Charles R.; Harrison, Charles W.; and White, William D., 4,262,791, Cl. 196-132.000.
Harrison Robert Woolworth: *See—*
Jacobson, Jon O.; and Parks, Richard E., 4,262,825, Cl. 222-503.000.
Hart, Cullen P., to Caterpillar Tractor Co. Drive mechanism. 4,262,556, Cl. 74-805.000.
Hartstein, Jack, to Bausch & Lomb Incorporated. Sutureless intraocular lens. 4,262,370, Cl. 3-13.000.
Haruta, Masahiro: *See—*
Nishimura, Yukuo; Haruta, Masahiro; Takatori, Yasushi; and Nishide, Katsuhiko, 4,263,601, Cl. 346-1.100.
Harvey, Colin G.: *See—*
Groenendaal, Willem; and Harvey, Colin G., 4,263,270, Cl. 423-573.00R.
Harvey, Kenneth, to Colgate-Palmolive Company. Dentifrices. 4,263,276, Cl. 424-52.000.
Harwood, Leopold A.: *See—*
Shanley, Robert L., II; Harwood, Leopold A.; and Wittmann, Erwin J., 4,263,610, Cl. 358-20.000.
Hasbro Industries, Inc.: *See—*
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Hasegawa, Akira: *See—*
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,262,938, Cl. 282-27.500.

Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Veneer lathe. 4,262,716, Cl. 144-213.000.

Hashimoto, Shunichi: *See—*
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,263,039, Cl. 71-95.000.

Haslett, Glenn M., to Caterpillar Tractor Co. Seal assembly. 4,262,970, Cl. 305-11.000.

Hata, Yuzo; and Kuratani, Katsumi, to Unitika Limited. Flame retardants for polyamides. 4,263,203, Cl. 260-45.85H.

Hatch, Michael R., to International Business Machines Corporation. Disk file with symmetrical hollow base. 4,263,629, Cl. 360-98.000.

Hathorn, Jack L.: *See—*
Scheier, Donald J.; and Hathorn, Jack L., 4,262,387, Cl. 17-45.000.

Haub, Donald J.: *See—*
Brown, Neil F.; Krier, Keith N.; Haub, Donald J.; and Waldhauser, Steven J., 4,262,382, Cl. 15-49.00R.

Haug, Edward W., to Barber-Colman Company. Method for positioning a dressing wheel. 4,262,456, Cl. 51-325.000.

Hauni-Werke Korber & Co. Kg.: *See—*
Hinzmann, Alfred, 4,262,680, Cl. 131-94.000.

Hausler, Richard; and Krebs, Karl, to Maschinenfabrik Andritz Actiengesellschaft. Decorticating drum with selective processing mode. 4,262,715, Cl. 144-208.00B.

Haves, Raymond H., to Wisco Corporation. Latch mechanism. 4,262,830, Cl. 224-42.060.

Hawkins, James B.: *See—*
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., 4,262,390, Cl. 19-50.000.

Hawkins, James M.: *See—*
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Hayashi, Kazuo: *See—*
Yamada, Yozo; Hayashi, Kazuo; and Kobayashi, Heihachiro, 4,263,633, Cl. 360-129.000.

Hayes, Thomas H., to Ethyl Corporation. Toothpaste tube with laminated headpiece. 4,262,819, Cl. 222-92.000.

Haynes, George R., to Shell Oil Company. β-Phenyl-β-hydroxyethylaminoalkyltheophyllines as inhibitors of biosynthesis of triglycerides. 4,263,301, Cl. 424-253.000.

Hebenstreit, Bertram; and Vereinigte Edelstahlwerke Aktiengesellschaft. Arrangement for counting and apportioning of rod-shaped uni-directionally oriented goods, in particular electrode rods. 4,262,793, Cl. 198-424.000.

Hecker, Michael, to Industrial Automation Corp. Gripper apparatus and method of gripping containers. 4,262,795, Cl. 198-479.000.

Hedgcoth, Virgile L.: *See—*
Smith, Jay, III; Hedgcoth, Virgile L.; and Grimm, Thomas H., 4,262,623, Cl. 118-31.500.

Heffner, Clifton W.: *See—*
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,262,470, Cl. 53-202.000.
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,262,474, Cl. 53-551.000.

Heilman, Marlin S.: *See—*
Kinney, Philip C.; Heilman, Marlin S.; and Hrubes, Albert J., 4,262,673, Cl. 128-419.00P.

Heim, Ulrich; and Albarda, Scato, to Dragerwerk Aktiengesellschaft. Apparatus for the electrically controlled proportioning and mixing of gases. 4,262,686, Cl. 137-7.000.

Hein, Klaus; and Schiffers, Ansgar, to Rheinisch-Westfalisches Elektrizitatswerk AG. Method of reducing the sulfur emissions from boilers fired with brown coal and, more generally, from boilers fired with low-rank solid fossil fuels and used in the production of electric power. 4,262,610, Cl. 110-342.000.

Heinze, Helmut: *See—*
Rothe, Hans-Jochen; Freund, Peter; Gey, Werner; and Heinze, Helmut, 4,263,425, Cl. 528-309.000.

Hellige GmbH: *See—*
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Hemmer, Valentine J.: *See—*
Gallusser, David O.; Pfendler, Donald L.; Uhlig, Herbert K.; Frear, David L.; Hemmer, Valentine J.; and Toombs, Gary C., 4,262,987, Cl. 339-258.00R.

Hempel, Reinhard: *See—*
Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, 4,263,313, Cl. 4245273 P-.

Henckens, Arnold; and Scheibler, Erich, to Uhde GmbH. Process for the production of nitric acid. 4,263,267, Cl. 423-393.000.

Hendy, Brian N., to Imperial Chemical Industries Limited. Method for producing an oriented tubular film. 4,263,252, Cl. 264-514.000.

Henkel Corporation: *See—*
Johnson, Ralph F.; and De Mars, Jimmy A., 4,263,103, Cl. 203-88.000.

Henning, Klaus-Dirk; Juntgen, Harald; and Klein, Jurgen, to Bergwerksverband GmbH. Process for eliminating hydrogen sulfide from gas mixtures. 4,263,271, Cl. 423-573.00G.

Henrich, Robert S., to Bendix Corporation, The. Oxygen sensor signal conditioner. 4,263,652, Cl. 364-431.000.

Henry, Rodney D.: *See—*
Glass, Howard L.; Elliott, Michael T.; and Henry, Rodney D., 4,263,374, Cl. 428-693.000.

Henschel, Giles: *See—*
King, Stanley; Henschel, Giles; and Lawson, Andrew, 4,262,571, Cl. 83-454.000.

Hepworth, Edward C.: *See—*
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Hercules Incorporated: *See—*
Aldrich, Paul H., 4,263,182, Cl. 260-9.000.

Heritage, Robert, to Rotaflex Limited. Lamp holder. 4,262,980, Cl. 339-1.00L.

Herman, Carl H.: *See—*
Bankes, Kristen E.; Herman, Carl H.; Johnson, Anderson F., Jr.; and Large, Donald M., 4,262,805, Cl. 209-656.000.

Herrin, Lenny, to Regent Paper Box Co., Inc. Sun visor. 4,262,367, Cl. 2-12.000.

Herz, Jean: *See—*
Chaumont, Philippe; Herz, Jean; and Prud'Homme, Christian, 4,263,401, Cl. 525-106.000.

Herzig, Eberhard: *See—*
Stemme, Otto; Lermann, Peter; Stenzenberger, Volkmar; Went, Werner; Herzig, Eberhard; and Hoesch, Friedrich-Ludolph, 4,263,000, Cl. 355-27.000.

Herzl, Peter J., to Fischer & Porter Co. Torque-transducer for vortex-shedding flowmeter having torsional sensor. 4,262,544, Cl. 73-861.240.

Heshmat, Hooshang; and Shapiro, Wilbur, to Mechanical Technology Incorporated. Compliant journal bearing with angular stiffness gradient. 4,262,975, Cl. 308-9.000.

Hesse, Robert H.; and Johnson, Graham, to Research Institute for Medicine and Chemistry, Inc. Process for the preparation of 1-hydroxylated vitamin D compounds. 4,263,215, Cl. 260-397.200.

Hewett, Thomas A.: *See—*
McCullough, Robert W.; and Hewett, Thomas A., 4,262,657, Cl. 126-436.000.

Hewitt, Martin; and Sinclair, David, to Smiths Industries Limited. Fluid-gauging methods and systems. 4,262,531, Cl. 73-304.00C.

Hewlett-Packard Company: *See—*
Epstein, Howard C., 4,263,506, Cl. 250-231.0SE.

Heximer, Donald G.: *See—*
Carney, Edward J.; Mediratta, Harbans L.; and Heximer, Donald G., 4,262,600, Cl. 104-172.0BT.

Heywood, Joseph R., to Heywood, Joseph Richard; and Ainsworth, Leonard Hastings. Reel spinning means. 4,262,906, Cl. 273-143.00R.

Heywood, Joseph Richard: *See—*
Heywood, Joseph R., 4,262,906, Cl. 273-143.00R.

High Efficiency Insulation Technologies, Inc.: *See—*
Hacker, Dennis J., 4,263,048, Cl. 106-84.000.

Hikita, Mitsutaka: *See—*
Kinoshita, Yasuaki; and Hikita, Mitsutaka, 4,263,571, Cl. 333-194.000.

Hill, Harvey J.; and Spiegelstein, Wolfgang, to Roberts Consolidated Industries, Inc. Boot for trimmer for resilient floor covering material. 4,262,418, Cl. 30-287.000.

Hinch, Stephen C.: *See—*
Gates, Allen P.; Hinch, Stephen C.; and Withers, Christopher V., 4,263,394, Cl. 430-287.000.

Hine, Edward K., Jr.; and Hine, Gregory S., to Hine-Snowbridge, Inc. Bicycle pack and method of attachment. 4,262,829, Cl. 224-32.00R.

Hine, Gregory S.: *See—*
Hine, Edward K., Jr.; and Hine, Gregory S., 4,262,829, Cl. 224-32.00R.

Hine, Harrison W. Sailboat hiking stick and stabilizing clip. 4,262,619, Cl. 114-144.00R.

Hine-Snowbridge, Inc.: *See—*
Hine, Edward K., Jr.; and Hine, Gregory S., 4,262,829, Cl. 224-32.00R.

Hinn, Werner, to RCA Corporation. Burst insertion apparatus for SECAM-PAL transcoder. 4,263,608, Cl. 358-11.000.

Hinn, Werner, to RCA Corporation. Automatic kinescope biasing system. 4,263,622, Cl. 358-242.000.

Hinzmann, Alfred, to Hauni-Werke Korber & Co. Kg. Method and apparatus for attaching filter plugs to cigarettes or the like. 4,262,680, Cl. 131-94.000.

Hirano, Masachika: *See—*
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,263,463, Cl. 568-873.000.

Hirata, Akira: *See—*
Uchida, Isamu; and Hirata, Akira, 4,262,896, Cl. 271-90.000.

Hirata, Osamu; and Seki, Mitsuaki, to Canon Kabushiki Kaisha. Electronic instrument with a flexible keyboard. 4,263,659, Cl. 364-709.000.

Hirose, Tokuzo. Sewing apparatus using thermoplastic staples. 4,262,836, Cl. 227-110.000.

Hiroyasu Funakubo: *See—*
Yamaguchi, Takao; and Ohara, Yutaka, 4,263,656, Cl. 364-559.000.

Hirsch, Horst E.: *See—*
Swinkels, Godefridus M.; Hirsch, Horst E.; Fairweather, Michael J.; and Parker, Ernest G., 4,263,109, Cl. 204-119.000.

Hirschberg, Joseph G., to University of Miami. Turbidity meter. 4,263,511, Cl. 250-343.000.

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Hisatsune, Yoshinobu; and Suzuki, Masaharu, to Aiphone Co., Ltd. Microphone unit. 4,263,484, Cl. 179-111.00E.

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Fujita, Hiroyuki; Suzaki, Yasuzi; and Tachibana, Atsushi, 4,263,495, Cl. 219-121.0LD.
Fukuzaki, Takaharu; and Kimura, Toshio, 4,263,654, Cl. 364-504.000.
Kamohara, Hideaki; Yoshitomi, Yuji; Koyama, Takaichi; and Tamai, Yasumasa, 4,262,517, Cl. 72-370.000.
Kinoshita, Yasuaki; and Hikita, Mitsutaka, 4,263,571, Cl. 333-194.000.
Konishi, Hiroo, 4,263,517, Cl. 307-82.000.
Kuroda, Michio; Nakamura, Shozo; Oshima, Ryoichiro; and Taki, Takamitsu, 4,262,485, Cl. 60-669.000.
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Otawara, Yasuhiko, 4,262,538, Cl. 73-593.000.
Sagusa, Hisayuki; Nonura, Yasushi; and Yabe, Ryohei, 4,263,512, Cl. 250-373.000.
Satake, Shozo; and Takizawa, Katsuhiko, 4,263,545, Cl. 324-57.0PS.
Sato, Takao; and Arita, Setsuo, 4,263,580, Cl. 340-163.000.
Tomita, Yoshifumi; and Nishizawa, Masahiro, 4,263,384, Cl. 430-25.000.

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Yamashita, Keitaro; and Goto, Ryuji, 4,263,390, Cl. 430-125.000.

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Donath, Wilm E.; and Hitchcock, Robert B., Sr., 4,263,651, Cl. 364-300.000.

Ho, Charles W.; and Takahashi, Tohru, to Dictran International Corp.; and Victor Company of Japan, Ltd. Automatic telephone answering and recording apparatus. 4,263,481, Cl. 179-6.140.

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Meyers, Theodore F., 4,263,498, Cl. 219-312.000.

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Hodson, Hollis C. Convertible folding tables. 4,262,606, Cl. 108-99.000.

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Busch, Wolfram; Brandrup, Johannes; Sommer, Werner; and Semmler, Horst, 4,263,200, Cl. 260-42.490.
Felcht, Utz-Hellmuth, 4,263,231, Cl. 260-968.000.
Handte, Reinhard, 4,263,440, Cl. 548-165.000.
Martini, Thomas; Mengler, Helmut; Rosch, Gunter; and Hohlfeld, Gunter, 4,263,176, Cl. 252-543.000.
Pintschovius, Ulrich; Schinzel, Erich; and Rosch, Gunter, 4,263,441, Cl. 548-220.000.
von der Ohe, Marianne; Sandow, Jurgen K.; and von Rechenberg, Wolfrad, 4,263,282, Cl. 424-177.000.

Hoechst-Roussel Pharmaceuticals, Inc.: *See*—
Martin, Lawrence L.; and Worm, Manfred, 4,263,317, Cl. 424-278.000.

Hoehn, Wolfgang, to ITT Industries, Inc. Integrated I^2L circuit for superimposing audio-frequency electrical signals of an electronic organ. 4,262,574, Cl. 84-1.010.

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Stemme, Otto; Lermann, Peter; Stenzenberger, Volkmar; Went, Werner; Herzig, Eberhard; and Hoesch, Friedrich-Ludolph, 4,263,000, Cl. 355-27.000.

Hoff, Raymond E.: *See*—
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Hoffberger, Charles C. Securing and loosening device for bottles, jars and the like. 4,262,560, Cl. 81-3.30R.

Hoffmann-La Roche Inc.: *See*—
Liu, Chao-Min; and Westley, John, 4,263,427, Cl. 536-1.000.

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Bohm, Manfred; and Hofgen, Gunter, 4,263,596, Cl. 343-106.00R.

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Holland, Larry D., to Neha International. Solar energy heat storage and transfer system. 4,262,653, Cl. 126-400.000.

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Orem, Donald E.; Holmes, Vernon P.; Bacsanyi, Thomas J.; and Harmon, Edward J., 4,262,536, Cl. 73-462.000.

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Holson, Sheldon, 4,263,357, Cl. 428-138.000.

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Holt, James L.: *See*—
Dretzka, Robert G.; Holt, James L.; and Payne, Guy D., 4,262,622, Cl. 440-1.000.

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Honda, Shoichi, 4,262,552, Cl. 74-572.000.

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Honeywell Information Systems Inc.: *See*—
Stafford, John P.; Slater, Richard A.; Kobs, Frederick E.; and Ryan, Joseph L., 4,263,648, Cl. 364-200.000.

Hong, Pangbu; and Yamazaki, Hiroshi, to Rikagaku Kenkyusho. Process for preparation of substituted olefins. 4,263,212, Cl. 260-347.500.

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Kazama, Takahiko; Hongo, Masahito; and Okuyama, Yutaka, 4,263,351, Cl. 427-355.000.

Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, to Sony Corporation. AFT circuit. 4,263,675, Cl. 455-192.000.

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Berens, George; and Honig, Milton L., 4,263,159, Cl. 252-79.000.

Hooker Chemicals & Plastics Corp.: *See*—
Annis, Myron C., 4,263,248, Cl. 264-328.200.
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,263,119, Cl. 204-257.000.

Hooper, Richard M.; and Meyerand, Russell G., Jr., to United Technologies Corporation. Hydrogen generation utilizing semiconducting platelets suspended in a divergent vertically flowing electrolyte solution. 4,263,111, Cl. 204-129.000.

Hoper, Jens: *See*—
Kessler, Manfred; and Hoper, Jens, 4,263,115, Cl. 204-195.00P.

Horikoshi, Akira; and Kumagai, Zene, to Konishiroku Photo Industry Co., Ltd. Photographic products. 4,263,397, Cl. 430-542.000.

Hornbeck, William W. Gauge for determination of shoulder bone angles in horses. 4,262,424, Cl. 33-174.00D.

Hoshikawa, Katuyuki: *See*—
Soeda, Kozi; Hoshikawa, Katuyuki; and Kimura, Akitaka, 4,262,624, Cl. 118-44.000.

Hoshizaki Electric Co., Ltd.: *See*—
Sakamoto, Shigetoshi, 4,262,489, Cl. 62-124.000.

Houseman, Henry J.; and McPherson, John S., to Eaton Corporation. Adjustable seat for an industrial vehicle. 4,262,958, Cl. 296-65.00R.

Howell, Norbert C.; and Tischuk, Walter, to H. H. Robertson Company. Method and apparatus for bending a laminated panel. 4,262,514, Cl. 72-55.000.

Hoya Corporation: *See*—
Ishibai, Isao; and Kobayashi, Kunimitsu, 4,262,988, Cl. 350-36.000.

Hoyer, Peter, to Pfeifer Seil-Und Hebetechnik GmbH & Co. Device for transporting prefabricated concrete sections. 4,262,951, Cl. 294-89.000.

Hoyt Manufacturing Corporation: *See*—
Janson, Harry W.; Kim, Jung W.; and Manzone, Richard R., 4,262,430, Cl. 34-43.000.

Hozeski, Kenneth W.: *See*—
Kolk, Stephen B.; and Hozeski, Kenneth W., 4,262,871, Cl. 248-188.700.

Hrubes, Albert J.: *See*—
Kinney, Philip C.; Heilman, Marlin S.; and Hrubes, Albert J., 4,262,673, Cl. 128-419.00P.

Hrynewycz, Orest, to Baxter Travenol Laboratories, Inc. Low-current E-frame electronic magnet with a permanent magnet armature for an I. V. valving controller. 4,262,824, Cl. 222-450.000.

Hughes Aircraft Company: *See*—
Jensen, William E., 4,263,522, Cl. 307-358.000.
Reeds, John W., Jr., 4,263,514, Cl. 250-492.00A.
Tangonan, Gregory L., 4,262,995, Cl. 350-96.160.
Williams, Frederick C.; and Greene, Clarence A., 4,263,600, Cl. 343-854.000.

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Walker, David M.; and Stevenson, Alastair K., 4,262,644, Cl. 123-418.000.

Huguenard, Albert P.; and Favre, Michel J., to Eastman Kodak Company. Crystallization process. 4,263,011, Cl. 23-300.000.

Huling, James K., to Barry-Wehmiller Company. Apparatus for and method of conserving energy in pasteurizers. 4,263,254, Cl. 422-25.000.

Hull, Frederick C.; and Tobin, John C., to United States of America, Energy. Process for stabilizing dimensions of duplex stainless steels for service at elevated temperatures. 4,263,063, Cl. 148-136.000.

Hunka, George W., to RCA Corporation. Signal detection system. 4,263,555, Cl. 328-165.000.

Hunt, C. Anthony: *See*—
Apple, Martin A.; Hunt, C. Anthony; and Yanagisawa, Hiroaki, 4,263,428, Cl. 536-17.00A.

Hunt, Clifton T.: *See*—
Emme, Harry W., 4,262,948, Cl. 294-1.0BB.

Hurnik, Helmut: *See*—
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Hurtig, Roy E.; Larson, Bert R.; and Smith, Steven D., to Verbatim Corporation. Tape cartridge with increased tape capacity. 4,262,860, Cl. 242-192.000.

Hurvitz, Esther: *See*—
Sela, Michael; Arnon, Ruth; Hurvitz, Esther; Maron, Ruth; and Levy, Ron, 4,263,279, Cl. 424-85.000.

Huss, Martin F.: *See*—
Ginsberg, Allen; Huss, Martin F.; and Lynn, Joseph, 4,262,907, Cl. 273-249.000.

Hutcheson, James L.: *See*—
de Echeandia, Rafael A.; and Hutcheson, James L., 4,262,708, Cl. 141-7.000.

Hutter, Horst, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschraankter Haftung. Apparatus for changing the wing positions of swingable wings of a missile. 4,262,862, Cl. 244-3.290.
Hydronautics, Incorporated: *See*—
Johnson, Virgil E., Jr.; Sundaram, T. R.; and Conn, Andrew F., 4,262,757, Cl. 175-67.000.
Ideal Toy Corporation: *See*—
Cooper, Julius; and Ensmann, Burt W., 4,262,444, Cl. 46-119.000.
Iida Sankyo Co., Ltd.: *See*—
Kobayashi, Toshiji, 4,262,687, Cl. 137-39.000.
Iida, Wataru; Tsujiuchi, Toshio; and Ishikawa, Shintaro, to Toyoda-Koki Kabushiki-Kaisha. Workpiece rotational speed controller for cam grinding machine. 4,262,454, Cl. 51-97.0NC.
Iizumi, Tomomitsu, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Flow rate control valve. 4,262,695, Cl. 137-599.000.
Ikeda, Hisashi; and Tsuchida, Shizuo, to Nihon Cement Company Limited. Method of abating nitrogen oxides in combustion waste gases. 4,263,264, Cl. 423-239.000.
Ilich, Daniel F. Solar cooker. 4,262,660, Cl. 126-451.000.
Ilich, Daniel F. Frame structure and method of making same. 4,262,810, Cl. 211-206.000.
Illinois Tool Works Inc.: *See*—
Dumbovic, Steve, 4,263,582, Cl. 340-365.00S.
Imaizumi, Hiroyuki: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.
Imamura, Kazuo: *See*—
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, 4,263,439, Cl. 546-251.000.
Imanari, Makoto: *See*—
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Immell, Raymond G.: *See*—
Bellee, Ernest C.; Immell, Raymond G.; and Sasser, Bill H., 4,263,598, Cl. 343-700.0MS.
Impala Plastics (Pty) Limited: *See*—
Takala, Seppo I., 4,263,084, Cl. 156-503.000.
Imperial Chemical Industries Limited: *See*—
Anderson, Brian, 4,263,206, Cl. 260-195.000.
Bowden, Roy D.; Burgess, Leslie; and Clark, Raymond J., 4,263,458, Cl. 568-323.000.
Buckley, Alan J.; Singer, Michael; and Wild, James H., 4,263,424, Cl. 528-85.000.
Hendy, Brian N., 4,263,252, Cl. 264-514.000.
Jennings, James R.; Cozens, Ross J.; and Lalkham, Michael J., 4,263,224, Cl. 260-465.80D.
Rochefort, Malcolm P.; and Gavens, Paul D., 4,263,168, Cl. 252-429.00B.
Inagaki, Mitsuo: *See*—
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Industrial Automation Corp.: *See*—
Hecker, Michael, 4,262,795, Cl. 198-479.000.
Ingersoll-Rand Company: *See*—
Webb, Paul D., 4,262,775, Cl. 184-6.400.
Ingle, James E.; and Moon, Jack L., to Kerr-McGee Corporation. System for detecting interfaces between mineral seams and the surrounding earth formations. 4,262,964, Cl. 299-1.000.
Inglis Limited: *See*—
Paulson, Philip D., 4,262,945, Cl. 292-89.000.
Inoue, Akihiko, to Alps Electric Co., Ltd. Locking device. 4,262,504, Cl. 70-151.00R.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,263,044, Cl. 75-126.00C.
Inoue, Kiyoshi, 4,263,116, Cl. 204-224.00M.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Iron/chromium/cobalt-base spinodal decomposition-type magnetic alloy. 4,263,044, Cl. 75-126.00C.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electrode holder-guidance assembly for wire-cut electrical machining. 4,263,116, Cl. 204-224.00M.
Inovius, Allan. Incinerators. 4,262,609, Cl. 110-244.000.
Institut Francais du Petrole: *See*—
Joubert, Philippe; Loupias, Michel; and Durando, Pierre, 4,263,004, Cl. 405-172.000.
Institute of Gas Technology: *See*—
Blurton, Keith F., 4,263,376, Cl. 429-42.000.
Weil, Sanford A.; Punwani, Dharamvir; and Bodle, William W., 4,263,125, Cl. 208-8.00R.
Instytut Przemyslu Organicznego: *See*—
Leszczynska, Halina; Gulcz, Michal; Januszewski, Zdzislaw; Godlewski, Czeslaw; Gorczyca, Zdzislaw; and Janota, Norbert, 4,263,012, Cl. 23-313.0FB.
Interlake, Inc.: *See*—
McConnell, Kennedy, 4,262,809, Cl. 211-192.000.
International Business Machines Corporation: *See*—
Ballatore, Daniel; Delaporte, Francois; Lebesnerais, Gerard; and Nuez, Jean-Paul, 4,263,518, Cl. 307-303.000.
Chenoweth, Roger D.; and Smith, Donald J., 4,263,634, Cl. 360-133.000.
Donath, Wilm E.; and Hitchcock, Robert B., Sr., 4,263,651, Cl. 364-300.000.
Hatch, Michael R., 4,263,629, Cl. 360-98.000.
Keefe, George E.; and Pugh, Emerson W., 4,263,662, Cl. 365-36.000.
Martin, William J.; and Kleen, Bergert G., 4,263,534, Cl. 315-169.400.
Pierson, Dwight L., 4,263,630, Cl. 360-104.000.
Staiger, Dieter E., 4,263,669, Cl. 371-27.000.
International Flavors & Fragrances Inc.: *See*—
Shu, Chi-Kuen; Mookherjee, Braja D.; and Vock, Manfred H., 4,263,331, Cl. 426-535.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,149, Cl. 252-8.900.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,208, Cl. 260-345.100.
Withycombe, Donald A.; Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; and Giacino, Christopher, 4,263,332, Cl. 426-535.000.
International Harvester Company: *See*—
Chatterjea, Probir K., 4,262,969, Cl. 303-71.000.
International Minerals & Chemical Corp.: *See*—
Edwards, Donald W.; Zukovich, Thomas M.; Thomas, Ronald D.; and Weigel, Ronald M., 4,263,068, Cl. 149-2.000.
International Mobile Machines Incorporated: *See*—
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,263,556, Cl. 328-207.000.
International Standard Electric Corporation: *See*—
Bohm, Manfred; and Hofgen, Gunter, 4,263,596, Cl. 343-106.00R.
Parfree, Colin S.; Gunn, Duncan A.; and Crownshaw, John C., 4,262,913, Cl. 277-1.000.
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Goodman, David S., 4,262,981, Cl. 339-17.00C.
John, Robert S., 4,263,587, Cl. 340-620.000.
Nemit, Jeffrey T., 4,263,568, Cl. 333-127.000.
Interx Research Corporation: *See*—
Epstein, Joseph; and Bodor, Nicholas S., 4,263,305, Cl. 424-263.000.
Ipri, Alfred C., to RCA Corporation. Method of manufacturing short channel MOS devices. 4,263,057, Cl. 148-1.500.
Iqbal, Abul: *See*—
Lienhard, Paul; Iqbal, Abul; and Peter, Heinz, 4,263,197, Cl. 260-37.00N.
Ireland, Robert W.: *See*—
Bowerman, Harold H., Jr.; and Ireland, Robert W., 4,263,075, Cl. 156-115.000.
Irvin, Howard B., to Phillips Petroleum Company. Two stage catalytic hydrogenation of olefinically unsaturated dinitriles. 4,263,228, Cl. 564-491.000.
Ishibai, Isao; and Kobayashi, Kunimitsu, to Hoya Corporation. Binoculars with automatic focussing system. 4,262,988, Cl. 350-36.000.
Ishibashi, Yoshiaki: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,263,581, Cl. 340-168.00B.
Ishida, Hidekuni: *See*—
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Ishidoshiro, Hiroshi: *See*—
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Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,263,008, Cl. 8-115.700.
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Iida, Wataru; Tsujiuchi, Toshio; and Ishikawa, Shintaro, 4,262,454, Cl. 51-97.0NC.
Ishizumi, Kikuo; and Katsube, Junki, to Sumitomo Chemical Company, Limited. 7 H-indolo[2,3-c]isoquinolines. 4,263,304, Cl. 424-262.000.
Isomat: *See*—
de Rougemont, Christian, 4,262,616, Cl. 114-94.000.
ISSEC SA: *See*—
Robillard, Jean J.; Riou, Claude R.; and Nodin, Christian, 4,263,105, Cl. 204-2.000.
Ital-Tractor I.T.M.: *See*—
Grilli, Walter; Crotti, Aldo; and Manicardi, Emidio, 4,262,973, Cl. 305-54.000.
Itatani, Hiroshi; Matsuda, Kenji; Terahigashi, Tadao; Kisita, Etsuzi; and Tone, Masatugu, to Kubota, Ltd. Power transmission system for tractor. 4,262,768, Cl. 180-242.000.
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Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,263,219, Cl. 260-453.0RW.
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Itoh, Hiroshi: *See*—
Murashita, Masaki; Nakano, Seizo; Itoh, Hiroshi; Shiono, Shigeo; and Takahashi, Takeshi, 4,263,491, Cl. 200-146.00R.
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Jikihara, Kazuo; Itoh, Shigekazu; Takayama, Shuichi; Sato, Koichi; Kimura, Ichiro; and Chiyomaru, Isao, 4,263,040, Cl. 71-100.000.
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Ivanov, Alexandr A.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel

M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.

Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, to Yamanouchi Pharmaceutical Co., Ltd. 7α-Methoxy-7β-(1,3-dithietane-2-carboxamido)cephalosporanic acid derivatives. 4,263,432, Cl. 544-21.000.

Iwane, Hiroshi: *See—*
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Izon Corporation: *See—*
Masucci, Carmine, 4,263,594, Cl. 340-795.000.

Jackson, Bert W. Method and apparatus for powered flue products exhaust and preheated combustion air supply. 4,262,608, Cl. 110-162.000.

Jackson, Eldon D.: *See—*
Wiedenbeck, Roger D.; and Jackson, Eldon D., 4,262,940, Cl. 285-61.000.

Jackson, Larry L. Cylindrical rotary controller for a solar heat system. 4,262,655, Cl. 126-429.000.

Jacobs, Merrit, to United States of America, Navy. Method of age testing rubber based propellants. 4,262,541, Cl. 73-826.000.

Jacobs, Stephen E.: *See—*
Merkley, Michael J.; Jacobs, Stephen E.; and Straub, Edward L., 4,262,750, Cl. 171-27.000.

Jacobson, Jon O.; and Parks, Richard E., to Harrison Robert Woolworth. Louvered clamshell door assembly for preheater charging bucket. 4,262,825, Cl. 222-503.000.

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Klaessig, Frederick C.; and Jacques, Donald F., 4,263,092, Cl. 162-48.000.

Jaeger, Ben E. Heated liquid sampler. 4,262,533, Cl. 73-422.0TC.

Jaisle, Richard F.; and Schiermeier, Walter W., to Formica Corporation. Process for releasing laminates. 4,263,073, Cl. 156-90.000.

James, Mark C., to Allis-Chalmers Corporation. Closing mechanism for a harvester safety door. 4,262,679, Cl. 130-27.0JT.

James, Robert G. Downhole seal for low profile oil well pumping installations. 4,262,742, Cl. 166-68.000.

Jamison, Thomas D.; and Radcliff, Frank T., to Electric Power Research Institute. Drive assembly for probe carrier. 4,262,539, Cl. 73-622.000.

Jamshidi, Khosrow. Biopsy needle having integral stylet locking device. 4,262,676, Cl. 128-753.000.

Jancis, Elmar H.: *See—*
Wheeler, Edward L.; and Jancis, Elmar H., 4,263,446, Cl. 560-75.000.

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Janik, Richard: *See—*
Gregory, William D.; Capots, Larry H.; George, James P.; and Janik, Richard, 4,263,551, Cl. 324-233.000.

Jankiewicz, Walter J. Automatically surfacing marker buoy for lobster or crab traps or the like. 4,262,379, Cl. 9-8.00R.

Janota, Norbert: *See—*
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Mitchell, Andrew; and Janssen, Kermit W., 4,262,744, Cl. 166-227.000.

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Jarman Company: *See—*
Leitzel, Ammon M., 4,262,928, Cl. 280-645.000.

Jarvinen, Willard B., to General Electric Company. Power converter control. 4,263,557, Cl. 318-341.000.

Jeblick, Werner: *See—*
Roos, Ernst; Jeblick, Werner; and Hurnik, Helmut, 4,263,165, Cl. 252-350.000.

Jenkins, William A., to Monarch Marking Systems, Inc. Flexible endless printing band and method of production. 4,263,242, Cl. 264-132.000.

Jennings, James R.; Cozens, Ross J.; and Lalkham, Michael J., to Imperial Chemical Industries Limited. Acrylonitrile dimerization process. 4,263,224, Cl. 260-465.80D.

Jensen, James D.; and Schoolar, Richard B., to United States of America, Navy. Graded gap semiconductor detector. 4,263,604, Cl. 357-30.000.

Jensen, William E., to Hughes Aircraft Company. Background subtractor using CCD techniques. 4,263,522, Cl. 307-358.000.

Jericho, Erwin: *See—*
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Jervis B. Webb Company: *See—*
McDonald, Clayton C., 4,262,796, Cl. 198-687.000.

Jervis, Richard: *See—*
Fichte, Rudolf; Retelsdorf, Hans-Joachim; Jervis, Richard; and Radel, Gunter, 4,263,046, Cl. 75-252.000.

Jesse, Peter: *See—*
Wolber, Robert; Maurer, Roland; and Jesse, Peter, 4,263,667, Cl. 368-300.000.

Jett, Richard G., to Ludlow Industries, Inc. Level winding reel mechanism for a bin level indicator. 4,262,854, Cl. 242-54.00R.

Jewiarz, Edouard J.: *See—*
Serres, Bernard M.; Viale, Maurice S.; and Jewiarz, Edouard J., 4,263,482, Cl. 179-6.30R.

Jikihara, Kazuo; Itoh, Shigekazu; Takayama, Shuichi; Sato, Koichi; Kimura, Ichiro; and Chiyomaru, Isao, to Kumiai Chemical Industry Co., Ltd. Phenoxyphenoxy unsaturated derivatives and herbicidal composition. 4,263,040, Cl. 71-100.000.

Jillie, Don W., Jr., to Sperry Corporation. Subminiature bore and conductor formation. 4,263,603, Cl. 357-5.000.

Jochen Plenk KG: *See—*
Plenk, Hans-Joachim, 4,262,925, Cl. 280-604.000.

Johansson, Anders H.: *See—*
Leo, Thomas J.; and Johansson, Anders H., 4,263,184, Cl. 260-17.4CL.

John D. Brush & Co., Inc.: *See—*
Burgess, George M.; and Avery, Roland M., Jr., 4,263,365, Cl. 428-310.000.

John, Robert S., to International Telephone and Telegraph Corporation. Liquid level control system. 4,263,587, Cl. 340-620.000.

Johnson, Anderson F., Jr.: *See—*
Bankes, Kristen E.; Herman, Carl H.; Johnson, Anderson F., Jr.; and Large, Donald M., 4,262,805, Cl. 209-656.000.

Johnson Associates, Inc.: *See—*
Branch, Gregory L., 4,262,944, Cl. 289-2.000.

Johnson Corporation, The: *See—*
Wiedenbeck, Roger D.; and Jackson, Eldon D., 4,262,940, Cl. 285-61.000.

Johnson, Dennis O.: *See—*
Johnson, Janet B.; and Johnson, Dennis O., 4,262,461, Cl. 52-81.000.

Johnson, Ernest D.; and Braun, David L., to Goodyear Tire & Rubber Company, The. Assembling hose units for appliances. 4,262,408, Cl. 29-507.000.

Johnson Farm Machinery Co., Inc.: *See—*
Turold, William E.; Cufaude, Marvin O.; Diaz, Frank A.; and Hanson, Robert A., 4,262,477, Cl. 56-327.00R.

Johnson, Graham: *See—*
Hesse, Robert H.; and Johnson, Graham, 4,263,215, Cl. 260-397.200.

Johnson, Janet B.; and Johnson, Dennis O. Geodesic dome connector. 4,262,461, Cl. 52-81.000.

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Kulkarni, Arun B.; and Vora, Kakubhai R., 4,263,274, Cl. 424-46.000.

Johnson, Michael R.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,263,438, Cl. 546-216.000.

Johnson, Philmore E., to Superior Electric Company, The. Test probe and terminal. 4,263,547, Cl. 324-72.500.

Johnson, Ralph F.; and De Mars, Jimmy A., to Henkel Corporation. Process for thermally stabilizing sterols by degassing and flash distilling. 4,263,103, Cl. 203-88.000.

Johnson, Virgil E., Jr.; Sundaram, T. R.; and Conn, Andrew F., to Hydronautics, Incorporated. Cavitating liquid jet assisted drill bit and method for deep-hole drilling. 4,262,757, Cl. 175-67.000.

Jones, Byron M., to Bucyrus-Erie Company. Motor drive system for an electric mining shovel. 4,263,535, Cl. 318-87.000.

Jones, Dwight V.: *See—*
Watrous, Donald L.; Jones, Dwight V.; and McArthur, Raymond J., 4,263,543, Cl. 322-8.000.

Jones, Jeffery C., to NBJ Corporation. Controlled air supply for internal combustion engines. 4,262,646, Cl. 123-556.000.

Jones, Richard A.; and Witenhafer, Donald E., to B. F. Goodrich Company, The. Process for coating reactors using organic compound vapor application. 4,263,421, Cl. 526-62.000.

Jones, Thomas H., to Richardson Graphics Company. Ultra high speed presensitized lithographic plates. 4,263,392, Cl. 430-169.000.

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Joshi, Ashok V.; and Liang, Charles C., to Duracell International Inc. Cathodes for primary solid state lithium cells. 4,263,377, Cl. 429-50.000.

Joubert, Philippe; Loupias, Michel; and Durando, Pierre, to Institut Francais du Petrole. Device for transferring a fluid through a liquid body by means of a flexible pipe. 4,263,004, Cl. 405-172.000.

Jubb, Albert; and Stansbury, Eric W., to Rolls-Royce Limited. Gas turbine engine power plant using solar energy as a heat source. 4,262,484, Cl. 60-641.000.

Jujo Paper Co., Ltd.: *See—*
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,262,938, Cl. 282-27.500.

Jukkola, Walfred W., to Dorr-Oliver Incorporated. Fluid bed calcining process. 4,263,262, Cl. 423-167.000.

Juntgen, Harald: *See—*
Henning, Klaus-Dirk; Juntgen, Harald; and Klein, Jurgen, 4,263,271, Cl. 423-573.00G.

Justman, Daniel B.: *See*—
Allison, Glenn L.; Winship, Thomas E.; and Justman, Daniel B., 4,262,760, Cl. 175-347.000.
Justrite Manufacturing Company: *See*—
Flider, Frank S., 4,262,448, Cl. 49-367.000.
K-M-P Pump Company, Inc.: *See*—
Parish, Carl D., 4,262,752, Cl. 172-574.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Suzuki, Hajime, 4,262,707, Cl. 139-435.000.
Kacal, Gary W., to ACF Industries, Incorporated. Cam means for ball valve seat rings. 4,262,691, Cl. 137-315.000.
Kajihata, Munetoshi; and Aoyama, Koji, to Nippon Gakki Seizo Kabushiki Kaisha. Signal detecting circuit for electronic musical instrument. 4,263,520, Cl. 307-350.000.
Kakumu, Tsunehito: *See*—
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakumu, Tsunehito, 4,262,674, Cl. 128-680.000.
Kalasek, Karl, to Vereinigte Edelstahlwerke Aktiengesellschaft. Steam-operated sterilization apparatus. 4,263,258, Cl. 422-113.000.
Kali-Chemie Pharma GmbH: *See*—
Eckert, Theodor; Kemper, Fritz H.; Wischniewski, Martin; and Hempel, Reinhard, 4,263,313, Cl. 4245273 P-.
Kaltenbach, Dieter. Method of and a device for the elimination of play in feeding means of a cold-action circular saw. 4,262,564, Cl. 83-56.000.
Kaltenbach, Thomas F.; and Martyn, John G., to Grow Group, Inc. Aqueous dispersion coating composition and application to molded articles. 4,263,352, Cl. 427-379.000.
Kama, Haruo: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,263,581, Cl. 340-168.00B.
Kamakura, Ichiro. Binocular. 4,262,990, Cl. 350-44.000.
Kamohara, Hideaki; Yoshitomi, Yuji; Koyama, Takaichi; and Tamai, Yasumasa, to Hitachi, Ltd. Method of correcting distorted pipe end. 4,262,517, Cl. 72-370.000.
Kamoshita, Katsuzo: *See*—
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,263,039, Cl. 71-95.000.
Kanai, Takao; and Nishikawa, Yasuhisa, to Clarion Co. Ltd. Pushbutton tuner. 4,262,547, Cl. 74-10.330.
Kanamori, Takeshi: *See*—
Kimura, Yukichi; Kanamori, Takeshi; and Sakamoto, Tomonori, 4,263,326, Cl. 424-331.000.
Kanda, Atsushi: *See*—
Nomura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, 4,262,710, Cl. 141-98.000.
Kandybowski, Steven J.: *See*—
Cherian, Gabriel B.; Scheingold, William S.; and Kandybowski, Steven J., 4,262,986, Cl. 339-252.00R.
Kanno, Nobuyuki: *See*—
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Kantelhardt, Werner: *See*—
Brandt, Joachim; and Kantelhardt, Werner, 4,263,022, Cl. 55-112.000.
Kao, Ming L.: *See*—
Chiu, Ran F.; Parrish, Henry H.; Kromer, Philip F., III; and Kao, Ming L., 4,263,671, Cl. 375-15.000.
Kao Soap Co., Ltd.: *See*—
Yamanaka, Makoto; Kobayashi, Takehiko; and Fujino, Takashi, 4,263,050, Cl. 106-287.170.
Karl Schmidt GmbH: *See*—
Korn, Hans; and Grothe, Klaus, 4,262,551, Cl. 74-552.000.
Karn, William S. Permeable membrane assembly. 4,263,017, Cl. 55-16.000.
Karow, Armand M., Jr. Portable device for cryopreservation, transportation and temporary cryogenic storage of semen and other similar tissue. 4,262,494, Cl. 62-384.000.
Kashima, Kenichi: *See*—
Nakajima, Tadashi; Rikimi, Kyoji; Soda, Yasuji; Kashima, Kenichi; Miyamoto, Akira; and Soejima, Yoshikazu, 4,263,286, Cl. 424-199.000.
Kasperek, Karl; and Glozbach, Peter, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Radiation measuring process for determining the concentration of fat in meats. 4,263,098, Cl. 176-10.000.
Kastl, Matthias: *See*—
Hang, Eberhard; and Kastl, Matthias, 4,262,404, Cl. 29-243.530.
Kato, Hisakatsu: *See*—
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,263,261, Cl. 423-121.000.
Kato, Nobuhiro; and Ohtani, Masami, to Diesel Kiki Co., Ltd. Air conditioning apparatus for vehicle. 4,262,738, Cl. 165-25.000.
Kato, Tetuo: *See*—
Katsumori, Teiji; Yokoyama, Shinji; and Kato, Tetuo, 4,262,779, Cl. 188-315.000.
Kato, Toshitake: *See*—
Yamamoto, Yasunobu; Ban, Hiroshi; Nakavishi, Katumi; Tomikawa, Ryoichi; Nakanishi, Katumi; Tomikawa, Ryoichi; and Kato, Toshitake, 4,262,788, Cl. 192-107.00M.
Kato, Tsuneo: *See*—
Torii, Shinro; Tanaka, Toshio; Sasaki, Kouichi; Kato, Tsuneo; and Abe, Shigeya, 4,262,647, Cl. 123-651.000.
Katsube, Junki: *See*—
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Katsumori, Teiji; Yokoyama, Shinji; and Kato, Tetuo, to Tokico Ltd. Shock absorber with reservoir and working chamber communicating structure. 4,262,779, Cl. 188-315.000.
Katsuta, Kihei: *See*—
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,262,850, Cl. 241-17.000.
Katz, Jonathon H. Fastener. 4,262,577, Cl. 411-15.000.
Katz, Lawrence E., to Olin Corporation. Selected 5-hydrazono-3-trichloromethyl-1,2,4-thiadiazoles and their use as foliar fungicides. 4,263,312, Cl. 424-270.000.
Kawabata, Kazunori: *See*—
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Kawabata, Kazunori, 4,262,639, Cl. 123-52.00M.
Kawasaki Steel Corporation: *See*—
Haida, Osamu; Emi, Toshihiko; Yamada, Sumio; Sudo, Fumio; and Sonoda, Hiraku, 4,263,043, Cl. 75-58.000.
Kazama, Takahiko; Hongo, Masahito; and Okuyama, Yutaka, to Toray Industries, Inc. Coating method. 4,263,351, Cl. 427-355.000.
KCL Corporation: *See*—
Ferrell, Robert A., 4,262,581, Cl. 493-188.000.
Keane, William J. Frequency discriminator apparatus. 4,263,554, Cl. 328-134.000.
KEB Industries: *See*—
Nethercutt, Henry W., 4,262,800, Cl. 206-364.000.
Keefe, George E.; and Pugh, Emerson W., to International Business Machines Corporation. Guard rail for contiguous element bubble chips. 4,263,662, Cl. 365-36.000.
Kellam, L. Birt. Vehicle with raisable roof. 4,262,956, Cl. 296-26.000.
Keller, Jed V., to Motorola, Inc. Plasma development process controller. 4,263,089, Cl. 156-627.000.
Kemmesies, Hartmut, to Siemens Aktiengesellschaft. Electric transmission system. 4,263,591, Cl. 340-695.000.
Kemper, Fritz H.: *See*—
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Kendall, Clarence E., Jr.: *See*—
Moore, Boyd B.; and Kendall, Clarence E., Jr., 4,262,703, Cl. 138-115.000.
Kenny, John, to Needle Industries Ltd. Electrical socket useful for connecting an electrode catheter to a cardiac pacemaker casing. 4,262,982, Cl. 339-60.00R.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Kasperek, Karl; and Glozbach, Peter, 4,263,098, Cl. 176-10.000.
Paschke, Manfred; Wagener, Klaus; and Wald, Maximilian, 4,263,403, Cl. 435-172.000.
Kernforschungszentrum Karlsruhe GmbH: *See*—
Ohlmeyer, Manfred; and Wilhelm, Jurgen, 4,263,028, Cl. 55-390.000.
Kerntopf, Bernd: *See*—
Jansen, Harry; and Kerntopf, Bernd, 4,262,888, Cl. 267-9.00A.
Kerr-McGee Corporation: *See*—
Ingle, James E.; and Moon, Jack L., 4,262,964, Cl. 299-1.000.
Kersten, Jean, to Baxter Travenol Laboratories, Inc. Airway connector. 4,262,671, Cl. 128-272.300.
Kessel, Bernhard. Trap-type drain fitting. 4,263,138, Cl. 210-163.000.
Kessler, Manfred; and Hoper, Jens, to Max Planck Gesellschaft zur Forderung der Wissenschaften. Ion-selective electrode device for polarographic measurement of oxygen. 4,263,115, Cl. 204-195.00P.
Ketola, Rainer B.: *See*—
Ahlen, Karl G.; and Ketola, Rainer B., 4,262,554, Cl. 74-677.000.
Keunecke, Gerhard; Klopfer, Anton; Krimphove, Herbert; and Sterck, Lothar, to Davy International Aktiengesellschaft. Process for the recovery of maleic anhydride from gases containing maleic anhydride. 4,263,211, Cl. 260-346.760.
Khromov, Gennady L.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A., 4,263,185, Cl. 260-17.40R.
Kief, Horst. Acupuncture instrument. 4,262,672, Cl. 128-329.00A.
Kienle, Fritz: *See*—
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Kilcher, Beat, to A.G. fur industrielle Elektronik AGIE. Spark erosion cutting apparatus with controlled flushing medium flow. 4,263,493, Cl. 219-69.00W.
Kim, Jung W.: *See*—
Janson, Harry W.; Kim, Jung W.; and Manzone, Richard R., 4,262,430, Cl. 34-43.000.
Kim, Sang H., to Eastman Kodak Company. Reference elements for ion-selective membrane electrodes. 4,263,343, Cl. 427-125.000.
Kimball International, Inc.: *See*—
Bean, Eric R., 4,262,575, Cl. 84-1.240.
Kimberly-Clark Corporation: *See*—
Kopacz, Thomas J., 4,262,897, Cl. 271-185.000.
Kimura, Akitaka: *See*—
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Kimura, Toshio: *See*—
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Kimura, Yukichi; Kanamori, Takeshi; and Sakamoto, Tomonori, to Lion Dentrifice Co. Ltd., The. Antimicrobial compositions containing an octylphenone. 4,263,326, Cl. 424-331.000.
King, John M.; and deVries, Louis, to Chevron Research Company. Process of preparing molybdenum complexes, the complexes so-produced and lubricants containing same. 4,263,152, Cl. 252-46.400.
King, Stanley; Henschel, Giles; and Lawson, Andrew, to Stanley Tools Limited. Guide assembly for use in sawing an elongate member. 4,262,571, Cl. 83-454.000.
King, William R., to Phillips Petroleum Company. Fluid flow control. 4,263,091, Cl. 159-44.000.
Kinney, Charles G. Three dimensional positionable workpiece support table. 4,262,891, Cl. 269-71.000.
Kinney, Philip C.; Heilman, Marlin S.; and Hrubes, Albert J., to Mieczyslaw Mirowski. Fluid tight coupling for electrode lead. 4,262,673, Cl. 128-419.00P.
Kinoshita, Yasuaki; and Hikita, Mitsutaka, to Hitachi, Ltd. Surface acoustic wave filter. 4,263,571, Cl. 333-194.000.
Kirkland, Kerry G., to Armco Inc. Remote multiple string well completion. 4,262,748, Cl. 166-348.000.
Kirmaier, Norbert L.: *See*—
Reis, August K.; Kirmaier, Norbert L.; and Schoberl, Meinolf H. A., 4,263,118, Cl. 204-242.000.
Kirst, Paul-Gerhard: *See*—
Eck, Herbert; Kirst, Paul-Gerhard; and Lechner, Wilhelm, 4,263,191, Cl. 260-29.60S.
Kishida, Hiroshi: *See*—
Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,263,219, Cl. 260-453.0RW.
Kisita, Etsuzi: *See*—
Itatani, Hiroshi; Matsuda, Kenji; Terahigashi, Tadao; Kisita, Etsuzi; and Tone, Masatugu, 4,262,768, Cl. 180-242.000.
Kispert, Klaus; and Meining, Hans, to SKF Kugellagerfabriken GmbH. Multi-part plastic cage for rolling bearings. 4,262,979, Cl. 308-217.000.
Kita, Donald A.; and Hall, Karlene E., to Pfizer Inc. Process for producing 2,5-diketogluconic. 4,263,402, Cl. 435-137.000.
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, to Sumitomo Chemical Company, Limited. Acetylenic secondary alcohols. 4,263,463, Cl. 568-873.000.
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Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,263,039, Cl. 71-95.000.
Kitts, Earle L., Jr., to Du Pont de Nemours, E. I., and Company. Charge receptor film for charge transfer imaging. 4,263,359, Cl. 428-195.000.
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Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,149, Cl. 252-8.900.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,208, Cl. 260-345.100.
Klaessig, Frederick C.; and Jacques, Donald F., to Betz Laboratories, Inc. Method for treating black liquor using acrylic acid polymer. 4,263,092, Cl. 162-48.000.
Kleemann, Axel: *See*—
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Kleen, Bergert G.: *See*—
Martin, William J.; and Kleen, Bergert G., 4,263,534, Cl. 315-169.400.
Klein, Gerald B. Conical can end with a gate and opening tab at the cone apex. 4,262,815, Cl. 220-273.000.
Klein, Jurgen: *See*—
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Klopfer, Anton: *See*—
Keunecke, Gerhard; Klopfer, Anton; Krimphove, Herbert; and Sterck, Lothar, 4,263,211, Cl. 260-346.760.
Klotzer, Sieghart; Moisar, Erik; and von Rintelen, Harald, to AGFA-Gevaert AG. Direct-positive photographic material. 4,263,396, Cl. 430-409.000.
Knell, Everett W.: *See*—
Wickstrom, Gary H.; Knell, Everett W.; Shaw, Benjamin W.; and Wang, Yue G., 4,263,124, Cl. 208-8.00R.
Knox, John H.; and Gilbert, Mary T., to Shandon Southern Products Limited. Preparation of porous carbon. 4,263,268, Cl. 423-449.000.
Kobayashi, Heihachiro: *See*—
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Kobayashi, Kozo, to Nakamichi Corporation. Control system for a tape recorder. 4,263,626, Cl. 360-60.000.
Kobayashi, Kunimitsu: *See*—
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Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, to Diesel Kiki Co., Ltd. Injection timing control device for distributor-type fuel injection pump. 4,262,645, Cl. 123-502.000.
Kobayashi, Ryuji; and Wakabayashi, Kuniaki, to Mitsubishi Kinsoku Kabushiki Kaisha. Method of producing an optical waveguide material. 4,263,030, Cl. 65-2.000.
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Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,262,938, Cl. 282-27.500.
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Kobayashi, Toshiji, to Iida Sankyo Co., Ltd. Electromagnetic valve security device for fuel supplies. 4,262,687, Cl. 137-39.000.
Kobinger, Walter: *See*—
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Stafford, John P.; Slater, Richard A.; Kobs, Frederick E.; and Ryan, Joseph L., 4,263,648, Cl. 364-200.000.
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Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.
Kodet, Reuben P., to American Hospital Supply Corporation. Collapsible pole assembly. 4,262,872, Cl. 248-311.300.
Koehring GmbH: *See*—
Kuhn, Hans, 4,262,755, Cl. 173-131.000.
Kohl, Paul A., to Bell Telephone Laboratories, Incorporated. Solder plating process. 4,263,106, Cl. 204-43.00S.
Kohn, Jean, to Baltek Corporation. Conversion of balsa logs into panels. 4,262,717, Cl. 144-316.000.
Koike, Kiyokazu, to NSK-Warner K. K. Buckle assembly for vehicle seat belt. 4,262,396, Cl. 24-230.0AL.
Koike, Tsutomu, to Toko, Inc. Switching regulator provided with error amplifier circuit having overcurrent protecting function. 4,263,643, Cl. 363-19.000.
Kokelenberg, Hendrik E.: *See*—
Delzenne, Gerard A.; and Kokelenberg, Hendrik E., 4,263,395, Cl. 430-332.000.
Kolk, Stephen B.; and Hozeski, Kenneth W., to Steelcase Inc. Plastic encapsulated base. 4,262,871, Cl. 248-188.700.
Kolln, Olaf: *See*—
Berndt, Gerhard; Bartsch, Adalbert; and Kolln, Olaf, 4,263,120, Cl. 204-273.000.
Kolmann, Knute E., to Varian Associates, Inc. Process for concurrent formation of base diffusion and p^+ profile from single source predeposition. 4,263,066, Cl. 148-187.000.
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Konishi, Hiroo, to Hitachi, Ltd. Control method and system for an high voltage direct current system. 4,263,517, Cl. 307-82.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Horikoshi, Akira; and Kumagai, Zene, 4,263,397, Cl. 430-542.000.
Kopacz, Thomas J., to Kimberly-Clark Corporation. Vertical-to-horizontal conveyor system. 4,262,897, Cl. 271-185.000.
Koppe, Herbert: *See*—
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Korn, Hans; and Grothe, Klaus, to Karl Schmidt GmbH. Safety steering wheel for motor vehicles. 4,262,551, Cl. 74-552.000.
Korobov, Gennady G.: *See*—
Berber, Viktor A.; and Korobov, Gennady G., 4,262,841, Cl. 233-29.000.
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Bochkarev, Ellin P.; Voronin, Nikolai G.; Korobov, Oleg E.; Maslov, Vadim N.; and Nikitina, Irina B., 4,262,630, Cl. 118-715.000.
Kos, Peter, to Dorr-Oliver Incorporated. Apparatus and method for the gravity settling of suspended solids. 4,263,137, Cl. 210-800.000.
Kosakai, Michiko. Shoe remover. 4,262,828, Cl. 223-115.000.
Kosky, Julius, to Bud, Hans. Sliding clasp fastening means. 4,262,395, Cl. 24-201.00C.
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Kotani, Matahira: *See*—
Matsumoto, Masafumi; and Kotani, Matahira, 4,263,602, Cl. 346-140.00R.
Kouth, Herbert, to Gofra Entwicklungsund Fertigungstechnik G.m.b.H. Drive system. 4,262,782, Cl. 192-8.00R.
Koyama, Takaichi: *See*—
Kamohara, Hideaki; Yoshitomi, Yuji; Koyama, Takaichi; and Tamai, Yasumasa, 4,262,517, Cl. 72-370.000.
Kradolfer, Friedrich; and Zak, Otokar, to Ciba-Geigy Corporation. Synergistic mixtures. 4,263,280, Cl. 424-114.000.
Kraftanlagen Aktiengesellschaft: *See*—
Kuhnert, Dieter; Meiler, Lothar; Rebholz, Herbert; and Zapf, Gunter, 4,262,611, Cl. 110-346.000.
Krass, Dennis K., to PPG Industries, Inc. 5-(2-Chloro-4-trifluoromethyl)-, or (4-trifluoromethyl or 2,6-dichloro-4-trifluoromethylphenox-

y)-2-nitro-substituted carbonyl oxime-O-alkyl ethers. 4,263,227, Cl. 564-256.000.
Kraus, Peter B., to De Lorean Manufacturing Company. Convertible chassis for track laying vehicles. 4,262,764, Cl. 180-9.480.
Krebs, Karl: *See—*
Hausler, Richard; and Krebs, Karl, 4,262,715, Cl. 144-208.00B.
Krebs, Murray A., to Chubb Industries Limited. Safety deposit box. 4,262,607, Cl. 109-58.000.
Krent, Edward D. Articulated body-steerable sled with add-on modules. 4,262,919, Cl. 280-16.000.
Kretchman, Gerald L.; and Morrison, Russell J., to Whirlpool Corporation. Retractable self-leveling support assembly for automatic washer. 4,262,870, Cl. 248-188.300.
Krier, Keith N.: *See—*
Brown, Neil F.; Krier, Keith N.; Haub, Donald J.; and Waldhauser, Steven J., 4,262,382, Cl. 15-49.00R.
Krimphove, Herbert: *See—*
Keunecke, Gerhard; Klopfer, Anton; Krimphove, Herbert; and Sterck, Lothar, 4,263,211, Cl. 260-346.760.
Kromer, Philip F., III: *See—*
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Krude, Werner; and Muller, Karl-Heinz, to Uni-Cardan AG. Sealing arrangement for a universal joint. 4,262,498, Cl. 64-21.000.
Krueger, William R.: *See—*
Cavil, David T.; and Krueger, William R., 4,262,643, Cl. 123-416.000.
Krylova, Vera E.: *See—*
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.
Kubacki, Ronald M. Thin film deposition apparatus using an RF glow discharge. 4,262,631, Cl. 118-723.000.
Kubo, Kimio; and Miyamae, Ryuichi, to Sharp Kabushiki Kaisha. Blood pressure measuring instrument having compensation circuit. 4,262,675, Cl. 128-680.000.
Kubota, Ltd.: *See—*
Itatani, Hiroshi; Matsuda, Kenji; Terahigashi, Tadao; Kisita, Etsuzi; and Tone, Masatugu, 4,262,768, Cl. 180-242.000.
Nomura, Takashi, 4,262,765, Cl. 180-19.00R.
Kubota, Tatsushi: *See—*
Motonami, Masanao; Yasumatsu, Jun; and Kubota, Tatsushi, 4,262,932, Cl. 280-802.000.
Kuebler, James F. Door security device. 4,262,503, Cl. 70-101.000.
Kuehnle, Manfred R.; and Perry, George J., to Coulter Systems Corporation. Electrophotographic attachment for use with an optical projecting system. 4,262,998, Cl. 355-10.000.
Kuhfuss, Alvin L., Jr., to Caterpillar Tractor Co. Governor and decelerator control linkage. 4,262,550, Cl. 74-482.000.
Kuhn, Franz J.: *See—*
Weber, Karl H.; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., 4,263,310, Cl. 424-269.000.
Kuhn, Hans, to Koehring GmbH. Shock absorbing pile driver. 4,262,755, Cl. 173-131.000.
Kuhnert, Dieter; Meiler, Lothar; Rebholz, Herbert; and Zapf, Gunter, to Kraftanlagen Aktiengesellschaft. Method of and apparatus for waste incineration. 4,262,611, Cl. 110-346.000.
Kulkarni, Arun B.; and Vora, Kakubhai R., to Johnson & Johnson. Antiperspirant compositions and methods. 4,263,274, Cl. 424-46.000.
Kumagai, Zene: *See—*
Horikoshi, Akira; and Kumagai, Zene, 4,263,397, Cl. 430-542.000.
Kumiai Chemical Industry Co., Ltd.: *See—*
Jikihara, Kazuo; Itoh, Shigekazu; Takayama, Shuichi; Sato, Koichi; Kimura, Ichiro; and Chiyomaru, Isao, 4,263,040, Cl. 71-100.000.
Kummer, Werner: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,263,300, Cl. 424-251.000.
Kuratani, Katsumi: *See—*
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Kuroda, Michio; Nakamura, Shozo; Oshima, Ryoichiro; and Taki, Takamitsu, to Hitachi, Ltd. Low boiling point medium power plant. 4,262,485, Cl. 60-669.000.
Kurz, Wilfried: *See—*
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Kuse, Kazuki: *See—*
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Kwiatkowski, George T.: *See—*
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L. D. Schreiber Cheese Co., Inc.: *See—*
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L.G.T. Laboratoire General des Telecommunications: *See—*
Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, 4,263,617, Cl. 358-186.000.
La Parmentiere P. Blache & Cie: *See—*
Saget, Pierre C., 4,262,386, Cl. 17-44.000.
Laauwe, Robert H., to Essex Chemical Corporation. Packaging and dispensing pill box. 4,262,802, Cl. 206-540.000.
Lab-Line Instruments Inc.: *See—*
Wilhelmson, Jack L., 4,263,501, Cl. 219-497.000.
LaBate, Micheal D. Prefabricated consumable blast furnace runner. 4,262,885, Cl. 266-196.000.
Labofina, S. A.: *See—*
Bracke, William J. L., 4,263,420, Cl. 525-309.000.
Laboratoires Serobiologiques S.A.: *See—*
Pauly, Marc, 4,263,223, Cl. 260-465.00F.
Lacey, James A., to Wright Manufacturing Company. Rotating and hinged knee prosthesis. 4,262,368, Cl. 3-1.911.
Lackey, Robert S.; and Young, Robert R., to Westinghouse Electric Corp. Heat pump. 4,262,493, Cl. 62-324.600.
Lafon, Jean-Luc, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Wide-band transistorized amplifier. 4,263,564, Cl. 330-293.000.
Lalikos, James M.; and Lefebvre, Kenneth E., to Titeflex Corporation. Self-aligning tube fitting. 4,262,941, Cl. 285-110.000.
Lalkham, Michael J.: *See—*
Jennings, James R.; Cozens, Ross J.; and Lalkham, Michael J., 4,263,224, Cl. 260-465.80D.
Lamarche, Michel; Petrov, Dimitri; and Maine, Arthur E., to Bendix Corporation, The. Acoustic fluid velocity measuring system. 4,262,545, Cl. 73-861.270.
Lampkin, Curtis M.: *See—*
Jordan, John F.; and Lampkin, Curtis M., 4,262,411, Cl. 29-572.000.
Lancini, Giancarlo: *See—*
White, Richard J.; Lancini, Giancarlo; and Antonini, Piero, 4,263,404, Cl. 435-253.000.
Landoni, Giannino, to Meca, S.n.c. Apparatus for controlling the transverse movement of a fabric supporting carriage in a quilting machine. 4,262,613, Cl. 112-118.000.
Landsman, Robert M., to LogEscan Systems, Inc. Method and apparatus for manipulating and transporting image media. 4,262,594, Cl. 101-382.0MV.
Lang, Gregor L. Solenoid fluid valves. 4,262,877, Cl. 251-141.000.
Lange, Glenn E.; and Lynch, Dennis M., to Western Electric Company, Inc. Terminated inductive coil assembly. 4,263,479, Cl. 178-46.000.
Langsdon, John K., Jr. Safety device for crossing railroads. 4,262,771, Cl. 182-1.000.
Laporte, Joseph L. Apparatus for storage and selection of suspended sheets. 4,262,808, Cl. 211-46.000.
Lapp, William H., Jr., to Mohawk Data Sciences Corp. Computer system with two busses. 4,263,649, Cl. 364-200.000.
Large, Donald M.: *See—*
Bankes, Kristen E.; Herman, Carl H.; Johnson, Anderson F., Jr.; and Large, Donald M., 4,262,805, Cl. 209-656.000.
Larson, Bert R.: *See—*
Hurtig, Roy E.; Larson, Bert R.; and Smith, Steven D., 4,262,860, Cl. 242-192.000.
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Budmiger, Hermann, 4,262,908, Cl. 273-310.000.
Lathlaen, Richard A., to TRW, Inc. Signal generating means. 4,263,525, Cl. 310-155.000.
Laughlin, Robert G.; and Fu, Juian-Juian L., to Procter & Gamble Company, The. Oxaalkanoate anti-ulcer composition. 4,263,281, Cl. 424-155.000.
Laurel Bank Machine Co., Ltd.: *See—*
Uchida, Isamu; and Hirata, Akira, 4,262,896, Cl. 271-90.000.
Lawson, Andrew: *See—*
King, Stanley; Henschel, Giles; and Lawson, Andrew, 4,262,571, Cl. 83-454.000.
Lazerand, Jean; and Risbec, Andre, to Colgate-Palmolive Company. Method for fixing a handle to a packing. 4,262,583, Cl. 493-444.000.
Leach, Harley A.: *See—*
Hanton, John P.; and Leach, Harley A., 4,262,632, Cl. 119-1.000.
Leacock, James, to Halcon Research and Development Corp. Process for oxidation of hydrocarbons. 4,263,448, Cl. 560-246.000.
Lear Siegler, Inc.: *See—*
Pierce, William C., 4,262,929, Cl. 280-713.000.
Leary, James F.; and Todd, Paul, to Research Corporation. Pulse edge measurement for determining particle dimensional characteristics. 4,263,508, Cl. 250-358.00R.
Lebesnerais, Gerard: *See—*
Ballatore, Daniel; Delaporte, Francois; Lebesnerais, Gerard; and Nuez, Jean-Paul, 4,263,518, Cl. 307-303.000.
Lechner, Wilhelm: *See—*
Eck, Herbert; Kirst, Paul-Gerhard; and Lechner, Wilhelm, 4,263,191, Cl. 260-29.60S.
Lee, Haa W. Hand exerciser having a counter. 4,262,898, Cl. 272-68.000.
Lee, Maw H.; and Chen, Chun F., to Clopay Corporation. Control circuit for a motor-driven door operator. 4,263,536, Cl. 318-266.000.
Lee, Ronald B., to Zenith Radio Corporation. Signal peaking method and apparatus. 4,263,616, Cl. 358-166.000.
Lefebvre, Kenneth E.: *See—*
Lalikos, James M.; and Lefebvre, Kenneth E., 4,262,941, Cl. 285-110.000.
Lefort, Marcel: *See—*
Bargain, Michel; and Lefort, Marcel, 4,263,436, Cl. 546-14.000.
Legatti, Raymond H.: *See—*
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Legrand, Bernard; and Masselin, Michel, to Alsthom-Atlantique. Snap fit support housing for a semiconductor power wafer. 4,263,607, Cl. 357-79.000.
Lehman, Robert: *See—*
Sisko, Paul; and Lehman, Robert, 4,262,890, Cl. 269-21.000.

Lehneis, Hans R.: *See*—
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Lehner AG: *See*—
Frigerio, Giuliano E., 4,263,272, Cl. 424-19.000.

Leibenzon, Semen A.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.

Leiendecker, Donald M.: *See*—
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Leiritz, Karl: *See*—
Buysch, Hans-Josef; Gruber, Hermann; Wellner, Wolfgang; and Leiritz, Karl, 4,263,162, Cl. 252-182.000.

Leitzel, Ammon M., to Jarman Company. Golf club carrier. 4,262,928, Cl. 280-645.000.

Lemoine, Jean: *See*—
Debat, Jacques; Lemoine, Jean; and Longuet, Monique, 4,263,285, Cl. 424-195.000.

Lenorak, Ferdinand, to Slovenska vedecko-technicka spolocnost, Dom techniky. Multitwist spindle. 4,262,479, Cl. 57-58.540.

Leo, Thomas J.; and Johansson, Anders H., to Wyrough and Loser, Inc. Homogeneous predispersed fiber compositions. 4,263,184, Cl. 260-17.4CL.

Lermann, Peter: *See*—
Stemme, Otto; Lermann, Peter; Stenzenberger, Volkmar; Went, Werner; Herzig, Eberhard; and Hoesch, Friedrich-Ludolph, 4,263,000, Cl. 355-27.000.

Les Cables de Lyon: *See*—
Bauguion, Laurent, 4,263,471, Cl. 174-34.000.

Le Salver, Robert; and Poupard, Dominique, to Automobiles Peugeot; and Societe Anonyme Automobiles Citroen. Elastically yieldable block structure, in particular for the suspension of an engine of a vehicle. 4,262,886, Cl. 267-8.00R.

Leszczynska, Halina; Gulcz, Michal; Januszewski, Zdzislaw; Godlewski, Czeslaw; Gorczyca, Zdzislaw; and Janota, Norbert, to Instytut Przemyslu Organicznego. Method of granulation of sulfur. 4,263,012, Cl. 23-313.0FB.

Leuschner, Udo; and Zinsberger, Alfons, to Bosch Siemens Hausgerate GmbH. Electric coffee maker. 4,262,585, Cl. 99-280.000.

Leverett, William H., to Durand-Wayland, Inc. Process and apparatus for weighing and sorting articles. 4,262,807, Cl. 209-592.000.

Levine, Alfred B. Pager receiver. 4,263,480, Cl. 179-2.0EC.

Levine, Seymour: *See*—
Lynch, Michael F.; and Levine, Seymour, 4,262,427, Cl. 33-361.000.

Levolor Lorentzen, Inc.: *See*—
Debs, Victor, 4,262,728, Cl. 160-168.00R.

Levy, Ron: *See*—
Sela, Michael; Arnon, Ruth; Hurvitz, Esther; Maron, Ruth; and Levy, Ron, 4,263,279, Cl. 424-85.000.

Levy, Stephen D.: *See*—
Gagliardi, George N.; and Levy, Stephen D., 4,263,136, Cl. 210-759.000.

Lewin, Michael K.: *See*—
Raab, Clifford G., 4,262,798, Cl. 206-315.00R.

Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier. Devices for detecting the rupture of an electrical circuit element. 4,263,589, Cl. 340-638.000.

Lewis, Ronnie L.; and Sherk, Fred T., to Phillips Petroleum Company. Removing carbonaceous contaminant from zinc oxide. 4,263,451, Cl. 562-481.000.

Leybold-Heraeus GmbH: *See*—
Reich, Gunter, 4,262,522, Cl. 73-23.000.

Liang, Charles C.: *See*—
Joshi, Ashok V.; and Liang, Charles C., 4,263,377, Cl. 429-50.000.

Liberti, Frank N., to General Electric Company. Process for the production of a foamed thermoplastic composition. 4,263,409, Cl. 521-81.000.

Liebel, Craig A., to Motorola, Inc. RF amplifying system having image rejection. 4,263,676, Cl. 455-285.000.

Liebermann, Howard H., to General Electric Company. Apparatus for melt puddle control and quench rate improvement in melt-spinning of metallic ribbons. 4,262,734, Cl. 164-423.000.

Lienhard, Paul; Iqbal, Abul; and Peter, Heinz, to Ciba-Geigy Corporation. Process for dyeing linear polyamides in the melt. 4,263,197, Cl. 260-37.00N.

Light, Ronald R.; Dombroski, John R.; and Hawkins, James M., to Eastman Kodak Company. Cellulose ester/copolyacrylate composition. 4,263,183, Cl. 260-17.00R.

Light & Sound Specialties, Inc.: *See*—
Altman, Peter W., 4,263,640, Cl. 362-252.000.

Lilienthal, Alfred J. Patient transfer apparatus. 4,262,375, Cl. 5-81.00B.

Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,263,300, Cl. 424-251.000.

Linde Aktiengesellschaft: *See*—
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Lindenthal, Hans: *See*—
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Lion Dentrifice Co. Ltd., The: *See*—
Kimura, Yukichi; Kanamori, Takeshi; and Sakamoto, Tomonori, 4,263,326, Cl. 424-331.000.

Little, John C.; and Youngson, Charles R., Jr., to Dow Chemical Company, The. Removal of organic contaminants from aqueous hydrochloric acid. 4,263,269, Cl. 423-488.000.

Litton Systems, Inc.: *See*—
Simmons, David H.; and Panelo, Alfredo A., 4,263,642, Cl. 363-17.000.

Liu, Chao-Min; and Westley, John, to Hoffmann-La Roche Inc. Monensin urethane derivatives. 4,263,427, Cl. 536-1.000.

Liu, Frank C.: *See*—
Gibson, Walter G.; Liu, Frank C.; and Muterspaugh, Max W., 4,263,611, Cl. 358-23.000.

Liu, Ping Y., to General Electric Company. Polycarbonate compositions. 4,263,415, Cl. 525-148.000.

Liu, Ping Y.; and Goedde, Edwin J., to General Electric Company. Polycarbonate compositions. 4,263,416, Cl. 525-148.000.

Logan, Maurus C.; Garner, Peter; and Stancati, Nicholas T., to Thomas & Betts Corporation. Tool for cleaving fiber optic elements. 4,262,417, Cl. 30-140.000.

LogEscan Systems, Inc.: *See*—
Landsman, Robert M., 4,262,594, Cl. 101-382.0MV.

Login, Robert B.; and Dutton, Daniel R., to BASF Wyandotte Corporation. Polyester-starch sized paper, sizing composition, and process therefor. 4,263,094, Cl. 162-164.00R.

Login, Robert B., to BASF Wyandotte Corporation. Sizing textile with in situ graft polyester. 4,263,337, Cl. 427-54.100.

Login, Robert B., to BASF Wyandotte Corporation. Graft polyesters and sized textiles. 4,263,370, Cl. 428-395.000.

Lohmann, Arthur M.: *See*—
Burg, Raymond H.; Lohmann, Arthur M.; and George, William C., 4,262,598, Cl. 102-246.000.

Long, Donald S. Apparatus for sharpening circular saw blades. 4,262,558, Cl. 76-37.000.

Longerich, Ernest P., to Singer Company, The. Anti torpedo device. 4,262,595, Cl. 102-10.000.

Longuet, Monique: *See*—
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Lopez, Francisco R. Disc brake grinding apparatus and method. 4,262,452, Cl. 51-89.000.

L'Oreal: *See*—
Bugaut, Andree; and Estradier, Francoise, 4,263,213, Cl. 260-347.700.

Lorenz, Donald H.; and Gruber, Bruce A., to GAF Corporation. Radiation curable coating composition comprising an oligomer and a copolymerizable ultra-violet absorber. 4,263,366, Cl. 428-332.000.

Loupias, Michel: *See*—
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Louzos, Demetrios V.; and Vourlis, Harry, to Union Carbide Corporation. Charge transfer complex cathodes for solid electrolyte cells. 4,263,382, Cl. 429-213.000.

Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, to Block Drug Company Inc. Alkanol amide toxicants. 4,263,321, Cl. 424-320.000.

Lowenstein, Frederick A.: *See*—
Wasserman, Allan; and Lowenstein, Frederick A., 4,262,480, Cl. 57-227.000.

Lowery, Kirby, Jr.; and Vance, Fred L., Jr., to Dow Chemical Company, The. Polymerization of olefins with dual, independently supported catalysts. 4,263,422, Cl. 526-97.000.

Lubrizol Corporation, The: *See*—
Clason, Donald L.; and Schroeck, Calvin W., 4,263,150, Cl. 252-32.70E.

Lucas, August: *See*—
Thiersch, Friedrich; and Lucas, August, 4,263,101, Cl. 202-248.000.

Lucas Industries Limited: *See*—
Morris, Adrian P., 4,263,546, Cl. 324-61.00R.

Lucas, John C.; and Aitken, William K., to British Railways Board. Concrete slab structure for railway track. 4,262,845, Cl. 238-7.000.

Lucien Ferraz & Cie.: *See*—
Fontaine, Jean-Claude, 4,263,575, Cl. 337-241.000.

Ludlow Corporation: *See*—
Whiting, Philip C., Jr., 4,263,080, Cl. 156-244.110.

Ludlow Industries, Inc.: *See*—
Jett, Richard G., 4,262,854, Cl. 242-54.00R.

Ludowici, Michael C. Wall facing assembly. 4,262,464, Cl. 52-510.000.

Luedtke, Arthur: *See*—
Bentley, Wm. F.; Luedtke, Arthur; and Scott, James E., 4,263,597, Cl. 343-121.000.

Luksha, Eugene: *See*—
Feiman, Vladimir; and Luksha, Eugene, 4,263,378, Cl. 429-105.000.

Lum, Wing Y.: *See*—
Clawson, Arthur R.; Lum, Wing Y.; and McWilliams, Gerald E., 4,263,064, Cl. 148-171.000.

Lummus Company, The: *See*—
Minkkinen, Ari A., 4,263,019, Cl. 55-37.000.

Lummus Industries, Inc.: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., 4,262,390, Cl. 19-50.000.

Lundgren, Bo T.: *See*—
Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., 4,263,323, Cl. 424-324.000.

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Lursat, Didier: *See*—
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Luthi, Christian: *See*—
Weber, Kurt; Luthi, Christian; and Meyer, Hans R., 4,263,431, Cl. 542-459.000.

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Bergler, Otto; and Lutz, Eugen, 4,262,421, Cl. 30-393.000.

Luzin, Pavel M.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.

Lynch, Charles R.; Harrison, Charles W.; and White, William D., to Texaco Inc. Draw rate signal generator. 4,262,791, Cl. 196-132.000.

Lynch, Dennis M.: *See*—
Lange, Glenn E.; and Lynch, Dennis M., 4,263,479, Cl. 178-46.000.

Lynch, Donald M.: *See*—
Lover, Myron J.; Singer, Arnold J.; Lynch, Donald M.; and Rhodes, William E., III, 4,263,321, Cl. 424-320.000.

Lynch, Michael F.; and Levine, Seymour, to Sperry Corporation. Flux valve compass system. 4,262,427, Cl. 33-361.000.

Lynn, Joseph: *See*—
Ginsberg, Allen; Huss, Martin F.; and Lynn, Joseph, 4,262,907, Cl. 273-249.000.

Lyon, Garnet R.: *See*—
Brown, Ivan R.; and Lyon, Garnet R., 4,262,563, Cl. 82-36.00A.

Lyons, Russell J., to Champion International Corporation. Paperboard toy projector. 4,262,905, Cl. 273-129.00W.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Bruckner, Carl-Heinz, 4,262,590, Cl. 101-76.000.

M & M Luggage Co., Inc.: *See*—
Stark, Theodore S., 4,262,718, Cl. 150-42.000.

Mackenzie, John R. File folder assembly having removable cover. 4,262,838, Cl. 229-72.000.

MacNeill, Arden B. Golf spike wrench and handle. 4,262,562, Cl. 81-90.00C.

Madej, Edward A., to Robroy Industries. Cable connector. 4,262,409, Cl. 29-526.00R.

Madgavkar, Ajay M.; and Bartek, Robert, to Gulf Research & Development Company. Recovery of boron trifluoride from a hydrocarbon liquid. 4,263,467, Cl. 585-525.000.

Madison, Vernon E.: *See*—
Riegelman, Harry M.; and Madison, Vernon E., 4,262,449, Cl. 49-404.000.

Maeda, Mamoru: *See*—
Tanabe, Kaoru; Nomura, Yoshifumi; Maeda, Mamoru; and Takagi, Mikio, 4,263,087, Cl. 156-613.000.

Maeda, Tetsuya: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, 4,263,432, Cl. 544-21.000.

Maeder, Edward G., to National Can Corporation. Drawing and ironing assembly for bodymaker. 4,262,512, Cl. 72-45.000.

Magida, David N. Cylindrical game device with circumferential walls. 4,262,904, Cl. 273-113.000.

Mago, Blake F., to Union Carbide Corporation. Poly(alkylene oxide) compositions. 4,263,167, Cl. 252-391.000.

Maheu, Joseph S. Electrical box. 4,263,472, Cl. 174-51.000.

Maida, William F.: *See*—
Hampton, George J.; and Maida, William F., 4,263,188, Cl. 260-29.2TN.

Maier, Alfred E.; and Farley, James R., to Westinghouse Electric Corp. Circuit breaker with anti-bounce mechanism. 4,263,492, Cl. 200-288.000.

Mail-Ex Corporation: *See*—
Russell, Robert J., 4,262,471, Cl. 53-381.00R.

Maine, Arthur E.: *See*—
Lamarche, Michel; Petrov, Dimitri; and Maine, Arthur E., 4,262,545, Cl. 73-861.270.

Maing, Il Y.; and Miller, Irene, to General Foods Corporation. Curcumin-metal color complexes. 4,263,333, Cl. 426-540.000.

Makita, Kunio; and Sato, Masahiro, to Nippondenso Co., Ltd. Rotational position detecting apparatus. 4,262,526, Cl. 73-116.000.

Malpass, Dennis B.; and Fannin, Loyd W., to Texas Alkyls, Inc. Hydrocarbon-soluble magnesium-aluminum compositions. 4,263,217, Cl. 260-448.00A.

Mangini, Angelo: *See*—
Merlo, Fabrizio; Battisti, Ruggero; Bornengo, Giorgio; Mazzaferro, Nicola; Mangini, Angelo; and Tundo, Antonio, 4,263,204, Cl. 260-147.000.

Manicardi, Emidio: *See*—
Grilli, Walter; Crotti, Aldo; and Manicardi, Emidio, 4,262,973, Cl. 305-54.000.

Mann, Walter J.: *See*—
Rosenblatt, Aaron A.; and Mann, Walter J., 4,262,529, Cl. 73-146.800.

Mannesmann Demag Ag: *See*—
Grimpe, Karl, 4,262,500, Cl. 64-28.00R.

Mansfield, Robert. Castle and village making toy. 4,262,442, Cl. 46-16.000.

Manzone, Richard R.: *See*—
Janson, Harry W.; Kim, Jung W.; and Manzone, Richard R., 4,262,430, Cl. 34-43.000.

Marano, Herbert W., to Vydec, Inc. Apparatus for moving an object, in particular the top sheet of a stack of individual sheets of cut paper. 4,262,894, Cl. 271-4.000.

Marchetti, Augusto. Device for spacing apart objects conveyed through an operation-performing machine. 4,262,468, Cl. 53-67.000.

Marconi, Walter; Bartoli, Francesco; Gulinelli, Silvio; Morisi, Franco; and Zaccardelli, Delio, to Snamprogetti S.p.A. Method for occluding sequestering agents in filamentary structure, occluded sequestering agents thus obtained and their applications. 4,263,180, Cl. 260-8.000.

Maresca, Louis M.: *See*—
Colon, Ismael; Maresca, Louis M.; and Kwiatkowski, George T., 4,263,466, Cl. 585-421.000.

Margulies, Herman, to Sterling Drug Inc. Container and dispensing plate for a roll of premoistened towelettes. 4,262,816, Cl. 221-46.000.

Marine, Jean: *See*—
Bensahel, Daniel; Marine, Jean; and Schaub, Bernard, 4,263,056, Cl. 148-1.500.

Mark Controls Corporation: *See*—
Sekiya, George W., 4,262,844, Cl. 236-48.00R.

Mark, Harold W.: *See*—
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,263,130, Cl. 208-113.000.
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,263,131, Cl. 208-114.000.

Mark, Victor; Webb, Jimmy L.; and Williams, Joseph B., to General Electric Company. Flame retardant polycarbonate composition. 4,263,201, Cl. 260-45.70S.

Marold, Lorraine M.: *See*—
Miyashiro, James J.; and Marold, Lorraine M., 4,263,398, Cl. 435-34.000.

Maron, Ruth: *See*—
Sela, Michael; Arnon, Ruth; Hurvitz, Esther; Maron, Ruth; and Levy, Ron, 4,263,279, Cl. 424-85.000.

Marschner, Friedemann: *See*—
Mollier, Friedrich; Marschner, Friedemann; Supp, Emil; Boll, Walter; and Cornelius, Gerhard, 4,263,141, Cl. 260-450.000.

Martin, Jerry R.: *See*—
Tadanier, John S.; and Martin, Jerry R., 4,263,429, Cl. 536-17.00R.

Martin, Lawrence L.; and Worm, Manfred, to Hoechst-Roussel Pharmaceuticals, Inc. Spiro[cyclohexane-1,1'(3'H)-isobenzofuran]s. 4,263,317, Cl. 424-278.000.

Martin, Roland, to Ateliers des Charmilles, S.A. Control means for the relative displacement of the electrodes of an EDM apparatus. 4,263,494, Cl. 219-69.00G.

Martin, William J.; and Kleen, Bergert G., to International Business Machines Corporation. Single sided sustain voltage generator. 4,263,534, Cl. 315-169.400.

Martinez, Ferdinand, to Coulter Systems Corporation. Lithographic printing plate and process for making same. 4,263,387, Cl. 430-49.000.

Martini, Thomas; Mengler, Helmut; Rosch, Gunter; and Hohlfeld, Gunter, to Hoechst Aktiengesellschaft. Color-stable brighteners for detergents. 4,263,176, Cl. 252-543.000.

Martyn, John G.: *See*—
Kaltenbach, Thomas F.; and Martyn, John G., 4,263,352, Cl. 427-379.000.

Martyniak, Gerald J., to Western Electric Company, Inc. Processes of making two-sided printed circuit boards, with through-hole connections. 4,263,341, Cl. 427-97.000.

Marvel Rack Manufacturing Co.: *See*—
Doyle, Melvin J., 4,262,570, Cl. 83-397.000.

Marvin Glass & Associates: *See*—
Ferris, Michael J.; Schoenfield, Palmer J.; and Meyer, Burton C., 4,262,443, Cl. 46-103.000.

Maschinenfabrik Andritz Actiengesellschaft: *See*—
Hausler, Richard; and Krebs, Karl, 4,262,715, Cl. 144-208.00B.

Maschinenfabrik Augsburg-Nurnberg AG: *See*—
Gronert, Heinz; Vetter, Jochen; and Eckert, Manfred, 4,262,840, Cl. 233-1.00R.

Maslov, Vadim N.: *See*—
Bochkarev, Ellin P.; Voronin, Nikolai G.; Korobov, Oleg E.; Maslov, Vadim N.; and Nikitina, Irina B., 4,262,630, Cl. 118-715.000.

Mason, James H., to Applied Power Inc. Vehicle frame alignment apparatus. 4,262,519, Cl. 72-457.000.

Masselin, Michel: *See*—
Legrand, Bernard; and Masselin, Michel, 4,263,607, Cl. 357-79.000.

Masucci, Carmine, to Izon Corporation. Electro-optical display design. 4,263,594, Cl. 340-795.000.

Matburn (Holdings) Limited: *See*—
Briggs, Peter J.; and Carpenter, Steven, 4,263,236, Cl. 264-26.000.

Mathys, Wilbur L.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,263,650, Cl. 364-200.000.

Matsubara, Akira; Sakai, Hideaki; Nakano, Takuo; and Suganuma, Toshio, to Mitsui Toatsu Chemicals, Incorporated. Quinolinecarboxylic acid substituted penicillins and pharmaceutical compositions containing the same. 4,263,302, Cl. 424-258.000.

Matsuda, Kenji: *See*—
Itatani, Hiroshi; Matsuda, Kenji; Terahigashi, Tadao; Kisita, Etsuzi; and Tone, Masatugu, 4,262,768, Cl. 180-242.000.

Matsukawa, Hiroharu: *See*—
Miyamoto, Akio; and Matsukawa, Hiroharu, 4,263,047, Cl. 106-21.000.

Matsumoto, Kenji: *See*—
Tadokoro, Yukio; and Matsumoto, Kenji, 4,262,721, Cl. 152-209.00R.
Matsumoto, Masafumi; and Kotani, Matahira, to Sharp Kabushiki Kaisha. Constant flow rate liquid supply pump. 4,263,602, Cl. 346-140.00R.
Matsuno, Yoshiyuki: *See*—
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,262,850, Cl. 241-17.000.
Matsuo, Takashi: *See*—
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,263,463, Cl. 568-873.000.
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,263,039, Cl. 71-95.000.
Matsuo, Takeshi: *See*—
Morita, Keiichi; Kobayashi, Tetsuo; and Matsuo, Takeshi, 4,262,492, Cl. 62-324.600.
Matsuoka, Hideoki: *See*—
Oka, Takashi; Matsuoka, Hideoki; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; and Mogi, Takaaki, 4,263,657, Cl. 364-561.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Obata, Shuichi, 4,263,483, Cl. 369-139.000.
Matthews, Donald P.; Wagner, Eugene R.; and McDermott, Roger D., to Dow Chemical Company, The. Hypoglycemic phenylpropynylamino benzoic acids. 4,263,320, Cl. 424-319.000.
Matty, Louis, Jr.: *See*—
Ebert, Lawrence B.; and Matty, Louis, Jr., 4,263,123, Cl. 208-8.0LE.
Maurer, Roland: *See*—
Wolber, Robert; Maurer, Roland; and Jesse, Peter, 4,263,667, Cl. 368-300.000.
Max Planck Gesellschaft zur Forderung der Wissenschaften: *See*—
Kessler, Manfred; and Hoper, Jens, 4,263,115, Cl. 204-195.00P.
Mayfield, Peter A., to Baker Perkins Holdings Limited. Manufacture of toffee and like confectionery. 4,262,709, Cl. 141-67.000.
Maytag Company, The: *See*—
Bergeson, Richard P., 4,263,489, Cl. 200-81.00R.
Mayumi, Masakatu; Mitooka, Kenji; Fujiwara, Sigeharu; and Okuyama, Takesi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Method for producing reinforced plastic tubular body having annular grooves, and mold therefor. 4,263,249, Cl. 264-334.000.
Mazzaferro, Nicola: *See*—
Merlo, Fabrizio; Battisti, Ruggero; Bornengo, Giorgio; Mazzaferro, Nicola; Mangini, Angelo; and Tundo, Antonio, 4,263,204, Cl. 260-147.000.
Mazzorana, Alfred B., to Societe de Paris et de Rhone. Starter motor for an internal combustion engine. 4,262,546, Cl. 74-7.00A.
McArthur, Raymond J.: *See*—
Watrous, Donald L.; Jones, Dwight V.; and McArthur, Raymond J., 4,263,543, Cl. 322-8.000.
McCaskey, Harold O., Jr.; and Cannady, Daniel L., Jr., to Westinghouse Electric Corp. Method of making an ultra thin glue adherable decorative laminate. 4,263,373, Cl. 428-531.000.
McCombs, Norman R.; and Vrana, Edward E., to Greene & Kellogg. Pressure swing adsorption process and system for gas separation. 4,263,018, Cl. 55-18.000.
McConnell, James R., to Tumac Industries, Inc. Central pivot assembly for a self-propelled, center-pivot irrigation system. 4,262,694, Cl. 137-580.000.
McConnell, Kennedy, to Interlake, Inc. Slotted beam and loadlock therefor. 4,262,809, Cl. 211-192.000.
McConnellogue, Neal J.; and Dean, Geoffrey J., to Entech Corporation. Apparatus for application of sealant to can lids. 4,262,629, Cl. 118-668.000.
McCoy, Floyd B., Jr.: *See*—
Boisvert, Jean; Bond, Bobby J.; and McCoy, Floyd B., Jr., 4,262,511, Cl. 72-17.000.
McCullough, Robert W.; and Hewett, Thomas A., to Union Carbide Corporation. Solar air heater. 4,262,657, Cl. 126-436.000.
McDaniel, Milton W.: *See*—
Elliott, Guy R. B.; Vanderborgh, Nicholas E.; and McDaniel, Milton W., 4,262,747, Cl. 166-305.00R.
McDermott, Roger D.: *See*—
Matthews, Donald P.; Wagner, Eugene R.; and McDermott, Roger D., 4,263,320, Cl. 424-319.000.
McDonald, Clayton C., to Jervis B. Webb Company. Conveyor chain and trolley assembly. 4,262,796, Cl. 198-687.000.
McDonald, William D. Scissor press. 4,262,588, Cl. 100-234.000.
McDonald, William K., to Teledyne Industries, Inc. Composite construction process and superconductor produced thereby. 4,262,412, Cl. 29-599.000.
McEntire, Bryan J.; and Virkar, Anil V., to United States of America, Energy. Sintering of beta-type alumina bodies using alpha-alumina encapsulation. 4,263,381, Cl. 429-193.000.
McErlane, John C., to Premix, Inc. Undermounted air deflector for trucks and trailers. 4,262,953, Cl. 296-1.00S.
McGinley, Emanuel J., to FMC Corporation. Water dispersible cellulosic powder and method of making the same. 4,263,334, Cl. 426-573.000.
McGraw, Edward W.: *See*—
Phillips, Charles A.; Pitrone, John A.; and McGraw, Edward W., 4,262,378, Cl. 9-8.00R.
McKay, Dwight L., to Phillips Petroleum Company. Cracking catalysts. 4,263,172, Cl. 252-439.000.
McKay, Dwight L.: *See*—
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,263,130, Cl. 208-113.000.
Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,263,131, Cl. 208-114.000.
McKinnon, Charles N., Jr. Method for cleaning and drying hollow fibers. 4,263,053, Cl. 134-21.000.
McKinnon, Eugene T.; and Drutz, Alvin S. Selectively mountable cold control device. 4,262,490, Cl. 62-132.000.
McLeod, Ian C.: *See*—
Price, Donald R., 4,263,074, Cl. 156-110.00R.
McLeod, Ian Campbell: *See*—
Price, Donald R., 4,262,719, Cl. 152-158.000.
McNeal, Walter P., to General Electric Company. Dynamoelectric machine insulators. 4,263,475, Cl. 174-138.00E.
McNeil, Daniel W.: *See*—
Phillips, Benjamin; Skraba, Walter J.; and McNeil, Daniel W., 4,263,447, Cl. 560-231.000.
McNeill, Judith K.: *See*—
Workman, David E.; Bromley, Robert L.; Burzen, Don N.; and McNeill, Judith K., 4,262,685, Cl. 132-79.00G.
McPherson, John S.: *See*—
Houseman, Henry J.; and McPherson, John S., 4,262,958, Cl. 296-65.00R.
McWilliams, Gerald E.: *See*—
Clawson, Arthur R.; Lum, Wing Y.; and McWilliams, Gerald E., 4,263,064, Cl. 148-171.000.
Mead Corporation, The: *See*—
Clement, Joseph, 4,262,436, Cl. 40-518.000.
Meca, S.n.c.: *See*—
Landoni, Giannino, 4,262,613, Cl. 112-118.000.
Mechanex Corporation, The: *See*—
Anderson, Larry B.; Hamkins, Clark J.; Petrak, Harry A.; and Schaefer, David V., 4,262,785, Cl. 192-35.000.
Mechanical Technology Incorporated: *See*—
Heshmat, Hooshang; and Shapiro, Wilbur, 4,262,975, Cl. 308-9.000.
Mecklenburg, Frank H., to Bird Electronic Corporation. Digital RF wattmeter. 4,263,653, Cl. 364-483.000.
Mediratta, Harbans L.: *See*—
Carney, Edward J.; Mediratta, Harbans L.; and Heximer, Donald G., 4,262,600, Cl. 104-172.0BT.
Medlar, Tony, to Rolls-Royce Limited. Method of welding by electron beam. 4,263,496, Cl. 219-121.0ED.
Medtronic, Inc.: *See*—
Stokes, Kenneth B., 4,262,678, Cl. 128-786.000.
Meiler, Lothar: *See*—
Kuhnert, Dieter; Meiler, Lothar; Rebholz, Herbert; and Zapf, Gunter, 4,262,611, Cl. 110-346.000.
Meinan Machinery Works, Inc.: *See*—
Hasegawa, Katsuji, 4,262,716, Cl. 144-213.000.
Meining, Hans: *See*—
Kispert, Klaus; and Meining, Hans, 4,262,979, Cl. 308-217.000.
Melbye, Arnulf, to A/S Norcem. Arrangement in roofing tiles. 4,262,462, Cl. 52-98.000.
Melnick, Joseph L.; and Wallis, Craig, to Baylor College of Medicine. Apparatus for measuring the approximate number of aerobic bacteria in water and other fluids. 4,263,405, Cl. 435-291.000.
Melton, Keith; and Mercier, Olivier, to Brown, Boveri & Cie Aktiengesellschaft. Thermal switch with a vitreous metal alloy switching element. 4,263,573, Cl. 337-140.000.
Melvin, Lawrence S., Jr.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,263,438, Cl. 546-216.000.
Menelly, Richard A.; and Doyle, Francis X. Corrosion resistant coating. 4,263,349, Cl. 427-352.000.
Mengler, Helmut: *See*—
Martini, Thomas; Mengler, Helmut; Rosch, Gunter; and Hohlfeld, Gunter, 4,263,176, Cl. 252-543.000.
Mensch, William D., Jr.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,263,650, Cl. 364-200.000.
Menshen, Arnold, to Walter Stauffenberg KG. Clamp for elongated cylindrical workpiece. 4,262,869, Cl. 248-74.00R.
Mercer, Frank B., to Netlon Limited. Net covering for articles. 4,263,246, Cl. 264-230.000.
Mercier, Olivier: *See*—
Melton, Keith; and Mercier, Olivier, 4,263,573, Cl. 337-140.000.
Merck & Co., Inc.: *See*—
Baldwin, John J., 4,263,307, Cl. 424-263.000.
Empey, Richard A.; and Dominik, Jurgen G., 4,263,399, Cl. 435-104.000.
Hannah, John, 4,263,306, Cl. 424-263.000.
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,263,207, Cl. 260-239.30T.
Merigan, Gary D. Folding pipe stand. 4,262,684, Cl. 131-260.000.
Merkley, Michael J.; Jacobs, Stephen E.; and Straub, Edward L. Shaker chain drive assembly for tomato harvester or the like. 4,262,750, Cl. 171-27.000.
Merlo, Fabrizio; Battisti, Ruggero; Bornengo, Giorgio; Mazzaferro, Nicola; Mangini, Angelo; and Tundo, Antonio, to Montedison S.p.A. Monoazoic hydrosoluble cationic dyes. 4,263,204, Cl. 260-147.000.

Merrell, Gregory L.; and Bernhard, Theodore L., to Allen-Bradley Company. Fault monitor for numerical control system. 4,263,647, Cl. 364-101.000.
Messerschmitt-Bolkow-Blohm: *See*—
Piening, Helmut, 4,262,867, Cl. 244-168.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschraankter Haftung: *See*—
Hutter, Horst, 4,262,862, Cl. 244-3.290.
Tybus, Gerd; and Neuking, Hartmut, 4,263,026, Cl. 55-344.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Moller, Friedrich; Marschner, Friedemann; Supp, Emil; Boll, Walter; and Cornelius, Gerhard, 4,263,141, Cl. 260-450.000.
Schminke, Heinz, 4,263,023, Cl. 55-112.000.
Metsala, Seppo J. Pipette. 4,263,257, Cl. 422-100.000.
Mettetal, Bert J., to Truck Safety Systems, Inc. Steering stabilizer. 4,262,920, Cl. 280-408.000.
Meyborg, Holger; Mormann, Werner; Grogler, Gerhard; and Schwindt, Jurgen, to Bayer Aktiengesellschaft. Process for the production of molded foams. 4,263,408, Cl. 521-51.000.
Meyborg, Holger: *See*—
Schwindt, Jurgen; Meyborg, Holger; Grogler, Gerhard; and Recker, Klaus, 4,263,423, Cl. 528-55.000.
Meyer, Alfred; and Kocher, Clemens, to Ciba-Geigy Corporation. Anticoccidial and ovolarvicidal compositions. 4,263,324, Cl. 424-325.000.
Meyer, Burton C.: *See*—
Ferris, Michael J.; Schoenfield, Palmer J.; and Meyer, Burton C., 4,262,443, Cl. 46-103.000.
Meyer, Hans R.: *See*—
Weber, Kurt; Luthi, Christian; and Meyer, Hans R., 4,263,431, Cl. 542-459.000.
Meyer, Victor, Jr.: *See*—
Bolgiano, Duane R.; Benjamin, Joel M., Jr.; and Meyer, Victor, Jr., 4,263,556, Cl. 328-207.000.
Meyerand, Russell G., Jr., to United Technologies Corporation. Hydrogen-bromine generation utilizing semiconducting platelets suspended in a vertically flowing electrolyte solution. 4,263,110, Cl. 204-128.000.
Meyerand, Russell G., Jr.: *See*—
Hooper, Richard M.; and Meyerand, Russell G., Jr., 4,263,111, Cl. 204-129.000.
Meyers, Theodore F., to Hobart Corporation. Expansion chamber arrangement for water heating and dispensing device. 4,263,498, Cl. 219-312.000.
MFE Corporation: *See*—
Burke, Edward F., Jr.; and Dunn, David S., 4,263,632, Cl. 360-106.000.
Michalek, Jan K., to Owens-Corning Fiberglas Corporation. Method and apparatus for collecting mineral fibers. 4,263,033, Cl. 65-4.00R.
Michel, Max; Vrisakis, Georges; Seigneurin, Laurent; and Bouge, Gilbert, to Rhone-Poulenc Industries. Process for the preparation of crystalline, alkaline, aluminosilicate. 4,263,266, Cl. 423-329.000.
Michelet, Daniel; and Rakoutz, Michel, to Philagro. Process for the preparation of unsaturated ethers. 4,263,462, Cl. 568-652.000.
Michelotti, Paul E. Running shoe with replaceable tread elements. 4,262,434, Cl. 36-67.00D.
Microphor, Inc.: *See*—
Burton, R. Edward, 4,263,142, Cl. 210-608.000.
Mieczyslaw Mirowski: *See*—
Kinney, Philip C.; Heilman, Marlin S.; and Hrubes, Albert J., 4,262,673, Cl. 128-419.00P.
Miesch, Hans, to Escher Wyss Limited. Support member. 4,262,400, Cl. 29-116.0AD.
Miesch, Hans, to Escher Wyss Limited. Hydrostatic support member. 4,262,401, Cl. 29-116.0AD.
Mikhailov, Evgeny I.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.
Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, to Nikki Co., Ltd. Bubble wash unit. 4,262,374, Cl. 4-537.000.
Miley, John W.: *See*—
Brendle, Ralph N.; Miley, John W.; and Allen, George A., 4,263,009, Cl. 8-495.000.
Milkovic, Miran: *See*—
Butler, Walter J.; and Milkovic, Miran, 4,262,532, Cl. 73-345.000.
Millen, Edward G.; and Pypczynski, Frank K., to Thiokol Corporation. Method of making an article comprising polysulfide rubbers. 4,263,078, Cl. 156-244.110.
Miller, Bruce E.: *See*—
Dagostino, Thomas P.; Miller, Bruce E.; and Navarro, Luis J., 4,263,593, Cl. 340-728.000.
Miller, Dye O.; and Godsen, Ronald, to A. J. Antunes & Co. Baking apparatus. 4,262,586, Cl. 99-345.000.
Miller, Irene: *See*—
Maing, Il Y.; and Miller, Irene, 4,263,333, Cl. 426-340.000.
Miller, Mathew C.: *See*—
Simcoe, Lee A.; and Miller, Mathew C., 4,262,882, Cl. 256-22.000.
Miller, Richard J.; Chang, Kwen-Jen; and Cuatrecasas, Pedro, to Burroughs Wellcome Co. Assay method and compounds. 4,263,255, Cl. 422-61.000.
Miller, Roy W., to Pullman Incorporated. Cam actuated railway hopper car lock mechanism. 4,262,601, Cl. 105-241.200.
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Brendle, Ralph N.; Miley, John W.; and Allen, George A., 4,263,009, Cl. 8-495.000.
Milne, Jonathan. Truck trailer suspension. 4,262,930, Cl. 280-718.000.
Mine, Akihiko: *See*—
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,263,039, Cl. 71-95.000.
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Minkkinen, Ari A., to Lummus Company, The. Vapor recovery. 4,263,019, Cl. 55-37.000.
Minnesota Mining and Manufacturing Company: *See*—
Bingham, Wallace K., 4,263,345, Cl. 427-163.000.
Fatuzzo, Carol L.; and Foss, George D., 4,263,061, Cl. 148-6.300.
Fraser, William J.; and Sweeny, Norman P., 4,262,937, Cl. 282-27.500.
West, Arthur C., 4,263,414, Cl. 525-102.000.
Wrobel, Norbert E., 4,262,835, Cl. 225-25.000.
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Yuasa, Yoshio, 4,262,997, Cl. 354-23.00D.
Miram, George, to Varian Associates, Inc. Grid coating for thermionic electron emission suppression. 4,263,528, Cl. 313-293.000.
Mitani Valve Co., Ltd.: *See*—
Monden, Yoshio, 4,262,823, Cl. 222-321.000.
Mitchell, Andrew; and Janssen, Kermit W., to Certain-teed Corporation. Molded fittings and methods of manufacture. 4,262,744, Cl. 166-227.000.
Mitooka, Kenji: *See*—
Mayumi, Masakatu; Mitooka, Kenji; Fujiwara, Sigeharu; and Okuyama, Takesi, 4,263,249, Cl. 264-334.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Mori, Teijiro; Wada, Yuichi; and Hamano, Suenobu, 4,263,574, Cl. 337-161.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Komatsu, Makoto; and Oda, Ryoichi, 4,263,452, Cl. 562-487.000.
Mitsubishi Jukogyo K.K.: *See*—
Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, 4,262,850, Cl. 241-17.000.
Mitsubishi Kinsoku Kabushiki Kaisha: *See*—
Kobayashi, Ryuji; and Wakabayashi, Kuniaki, 4,263,030, Cl. 65-2.000.
Mitsubishi Petrochemical Company, Ltd.: *See*—
Takeda, Makoto; Taniyama, Eiji; Ozawa, Yuji; Imanari, Makoto; Takahashi, Kunimasa; and Iwane, Hiroshi, 4,263,457, Cl. 568-316.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Matsubara, Akira; Sakai, Hideaki; Nakano, Takuo; and Suganuma, Toshio, 4,263,302, Cl. 424-258.000.
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,262,938, Cl. 282-27.500.
Mitter, Norbert, to Dragerwerk Aktiengesellschaft. Phase-selective amplifier. 4,263,558, Cl. 330-10.000.
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing pyridine bases. 4,263,439, Cl. 546-251.000.
Miyamae, Ryuichi: *See*—
Kubo, Kimio; and Miyamae, Ryuichi, 4,262,675, Cl. 128-680.000.
Miyamoto, Akio, to Fuji Photo Film Co., Ltd. Color developing ink containing aliphatic esters with 8-25 carbon atoms. 4,262,936, Cl. 282-27.500.
Miyamoto, Akio; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Color developing ink. 4,263,047, Cl. 106-21.000.
Miyamoto, Akira: *See*—
Nakajima, Tadashi; Rikimi, Kyoji; Soda, Yasuji; Kashima, Kenichi; Miyamoto, Akira; and Soejima, Yoshikazu, 4,263,286, Cl. 424-199.000.
Miyamura, Nobuhiro: *See*—
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,262,722, Cl. 152-209.00R.
Miyashiro, James J.; and Marold, Lorraine M., to Morton-Norwich Products, Inc. 9-(P-diethylaminophenyl)-9-chloro-10-phenylacridan agar medium. 4,263,398, Cl. 435-34.000.
Miyashita, Osamu; and Akimoto, Hiroshi, to Takeda Chemical Industries, Ltd. Maytansinoids, pharmaceutical compositions thereof and method of use thereof. 4,263,294, Cl. 424-248.540.
Miyazaki, Kensaku, to Olympus Optical Company, Ltd. Marker assembly for use with a microscope. 4,262,426, Cl. 33-189.000.
Mize, Lee S. Ratchet and gear drive socket wrench handle. 4,262,561, Cl. 81-57.290.
Mizote, Masanori: *See*—
Oka, Takashi; Matsuoka, Hideoki; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; and Mogi, Takaaki, 4,263,657, Cl. 364-561.000.
Mizutani, Toshio: *See*—
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,263,463, Cl. 568-873.000.
Mobil Oil Corporation: *See*—
Chen, Nai Y.; and Shihabi, David S., 4,263,129, Cl. 208-111.000.
Rollmann, Louis D., 4,263,126, Cl. 208-14.000.
Schoennagel, Hans J., 4,263,134, Cl. 208-139.000.

Modine Manufacturing Company: *See*—
Carravetta, James J.; and Robinson, Edward A., 4,262,625, Cl. 118-101.000.
Moellmer, Frank, to Siemens Aktiengesellschaft. Surface acoustic wave arrangement with improved suppression of spurious signals. 4,263,569, Cl. 333-151.000.
Moen, Carl J., to Beloit Corporation. Broad-band pulsation attenuator. 4,262,700, Cl. 138-26.000.
Mogaki, Tadahisa: *See*—
Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, 4,262,374, Cl. 4-537.000.
Mogi, Takaaki: *See*—
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Mohawk Data Sciences Corp.: *See*—
Lapp, William H., Jr., 4,263,649, Cl. 364-200.000.
Mohring, Edgar; Stadler, Peter; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating arthropods with 1,3-substituted-(1,2,3,4,5,6H)-triazine-2,4-diones. 4,263,296, Cl. 424-249.000.
Moisar, Erik: *See*—
Klotzer, Sieghart; Moisar, Erik; and von Rintelen, Harald, 4,263,396, Cl. 430-409.000.
Molins Limited: *See*—
Davies, Robert W., 4,262,792, Cl. 198-348.000.
Moll, Klaus: *See*—
Schulze, Helmut; and Moll, Klaus, 4,263,542, Cl. 318-803.000.
Moller, Friedrich; Marschner, Friedemann; Supp, Emil; Boll, Walter; and Cornelius, Gerhard, to Metallgesellschaft Aktiengesellschaft. Process of producing gasoline from synthesis gas. 4,263,141, Cl. 260-450.000.
Monarch Marking Systems, Inc.: *See*—
Jenkins, William A., 4,263,242, Cl. 264-132.000.
Strausburg, Larry D., 4,263,086, Cl. 156-542.000.
Monden, Yoshio, to Mitani Valve Co., Ltd. Atomizing pump. 4,262,823, Cl. 222-321.000.
Montague, Marvin. Log carrier. 4,262,811, Cl. 212-87.000.
Monte, Anthony J., to United States of America, Army. Fire suppression bladder system for fuel tanks. 4,262,749, Cl. 169-62.000.
Montedison S.p.A.: *See*—
Merlo, Fabrizio; Battisti, Ruggero; Bornengo, Giorgio; Mazzaferro, Nicola; Mangini, Angelo; and Tundo, Antonio, 4,263,204, Cl. 260-147.000.
Scata, Umberto; and Cecchin, Giuliano, 4,263,169, Cl. 252-429.00B.
Mookherjee, Braja D.: *See*—
Shu, Chi-Kuen; Mookherjee, Braja D.; and Vock, Manfred H., 4,263,331, Cl. 426-535.000.
Withycombe, Donald A.; Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; and Giacino, Christopher, 4,263,332, Cl. 426-535.000.
Moon, Jack L.: *See*—
Ingle, James E.; and Moon, Jack L., 4,262,964, Cl. 299-1.000.
Mooney Chemicals, Inc.: *See*—
Bak, Eugene, 4,263,411, Cl. 521-108.000.
Moore, Boyd B.; and Kendall, Clarence E., Jr., to Custom Cable Company. Impact resistant control line. 4,262,703, Cl. 138-115.000.
Moore, C. William: *See*—
Dauvergne, Hector A.; and Moore, C. William, 4,262,635, Cl. 122-235.00C.
Moore, Charles D., to Ford Motor Company. Elastomeric engine mount. 4,262,889, Cl. 267-140.500.
Moore, Kenneth L.: *See*—
Reed, Russell, Jr.; and Moore, Kenneth L., 4,263,069, Cl. 149-11.000.
Mori, Teijiro; Wada, Yuichi; and Hamano, Suenobu, to Mitsubishi Denki Kabushiki Kaisha. Slit type current limiting fuse. 4,263,574, Cl. 337-161.000.
Morii, Kokichi; Shichijo, Hajime; and Haneishi, Kohei, to Sony Corporation; and Alps Electric Co., Ltd. Multi-band voltage variable capacitance tuner having automatic and manual tuning operations. 4,263,674, Cl. 455-175.000.
Morisi, Franco: *See*—
Marconi, Walter; Bartoli, Francesco; Gulinelli, Silvio; Morisi, Franco; and Zaccardelli, Delio, 4,263,180, Cl. 260-8.000.
Morita, Keiichi; Kobayashi, Tetsuo; and Matsuo, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Airconditioner. 4,262,492, Cl. 62-324.600.
Morle, Charles W., to Coulter Electronics, Inc. Cuvettes for automatic chemical apparatus. 4,263,256, Cl. 422-66.000.
Mormann, Werner: *See*—
Meyborg, Holger; Mormann, Werner; Grogler, Gerhard; and Schwindt, Jurgen, 4,263,408, Cl. 521-51.000.
Morris, Adrian P., to Lucas Industries Limited. Displacement transducer system. 4,263,546, Cl. 324-61.00R.
Morris, Jeffrey M.: *See*—
Wise, Louis; and Voves, James E., 4,262,957, Cl. 296-37.100.
Morris, Robert C.; and O'Dell, E. Wayne, to Allied Chemical Corporation. Multi-element pleochroic genstomes. 4,262,497, Cl. 63-32.000.
Morrison, Harold. Liquid sampling system. 4,262,534, Cl. 73-422.0TC.
Morrison, Russell J.: *See*—
Kretchman, Gerald L.; and Morrison, Russell J., 4,262,870, Cl. 248-188.300.
Morse, George W., to Pullman Incorporated. Door locking arrangement for railway hopper car. 4,262,603, Cl. 105-310.000.
Morse, Suzanne A., to Olin Corporation. Process for the preparation of stable dispersions of alkyl phosphate esters. 4,263,160, Cl. 252-174.160.
Morton, James W., to General Electric Company. Method and apparatus for making an electrical coil with insulated lead structure. 4,262,413, Cl. 29-605.000.
Morton-Norwich Products, Inc.: *See*—
Miyashiro, James J.; and Marold, Lorraine M., 4,263,398, Cl. 435-34.000.
Moscatelli, Anthony. Hemispherical lock cylinder. 4,262,505, Cl. 70-358.000.
Moschensky, Anatoly D.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A., 4,263,185, Cl. 260-17.40R.
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Anode elements for monopolar filter press electrolysis cells. 4,263,119, Cl. 204-257.000.
Mosely, Gordon P.; and Dillahunty, Michael D., to W. R. Grace & Co. Combined RPM limiter, and electronic tachometer with shift point indicator. 4,262,641, Cl. 123-335.000.
Moser, Paul: *See*—
Rasberger, Michael; Evans, Samuel; and Moser, Paul, 4,263,202, Cl. 260-45.75R.
Moskvitin, Valery A.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A., 4,263,185, Cl. 260-17.40R.
Motonami, Masanao; Yasumatsu, Jun; and Kubota, Tatsushi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Seatbelt system. 4,262,932, Cl. 280-802.000.
Motorola, Inc.: *See*—
Bellee, Ernest C.; Immell, Raymond G.; and Sasser, Bill H., 4,263,598, Cl. 343-700.0MS.
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,263,650, Cl. 364-200.000.
Gorin, Georges J., 4,263,088, Cl. 156-626.000.
Keller, Jed V., 4,263,089, Cl. 156-627.000.
Liebel, Craig A., 4,263,676, Cl. 455-285.000.
Powell, Michael W., 4,263,663, Cl. 365-182.000.
Prioste, Jerry E., 4,263,660, Cl. 364-716.000.
Thompson, Stephen W.; Smith, Harry G.; and Rosler, Richard S., 4,263,336, Cl. 427-45.100.
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Kawabata, Kazunori, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of a multi-cylinder internal combustion engine. 4,262,639, Cl. 123-52.00M.
Movshovich, Ilya A.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A., 4,263,185, Cl. 260-17.40R.
Muehlhausen II, Almon A., to Bell Telephone Laboratories, Incorporated. Connector for plural conductors. 4,262,985, Cl. 339-99.00R.
Muller, Hans-Otto: *See*—
Bauer, Kurt; Hagena, Detlef; and Muller, Hans-Otto, 4,263,459, Cl. 568-448.000.
Muller, Karl-Heinz: *See*—
Krude, Werner; and Muller, Karl-Heinz, 4,262,498, Cl. 64-21.000.
Murakami, Hisamichi: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,262,938, Cl. 282-27.500.
Murashita, Masaki; Nakano, Seizo; Itoh, Hiroshi; Shiono, Shigeo; and Takahashi, Takeshi, to Hitachi, Ltd. Method for checking electric contacts of an enclosed-type switching device and an auxiliary apparatus for use with the switching device to use the method. 4,263,491, Cl. 200-146.00R.
Murata Manufacturing Co., Ltd.: *See*—
Murata, Michihiro; and Okabe, Shinsei, 4,263,576, Cl. 338-35.000.
Murata, Michihiro; and Okabe, Shinsei, to Murata Manufacturing Co., Ltd. Humidity sensitive device. 4,263,576, Cl. 338-35.000.
Murata, Mitsuhiro, to Citizen Watch Co., Ltd. Device for correcting digital display used in electronic timepieces. 4,263,666, Cl. 368-187.000.
Mussinan, Cynthia J.: *See*—
Withycombe, Donald A.; Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; and Giacino, Christopher, 4,263,332, Cl. 426-535.000.
Muterspaugh, Max W.: *See*—
Gibson, Walter G.; Liu, Frank C.; and Muterspaugh, Max W., 4,263,611, Cl. 358-23.000.
N. L. Industries, Inc.: *See*—
Altman, Roger L.; and Rao, M. Vikram, 4,263,042, Cl. 75-24.000.
Nagano, Noriaki: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, 4,263,432, Cl. 544-21.000.
Nagano, Yoshinobu: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, 4,263,432, Cl. 544-21.000.

Naik, Dilip T.: *See—*
Patil, Babgaunda A.; Tuck, Richard L., Sr.; and Naik, Dilip T., 4,262,604, Cl. 105-377.000.

Nakabayashi, Yasuyuki; Matsuno, Yoshiyuki; and Katsuta, Kihei, to Mitsubishi Jukogyo K.K.; and Electric Power Development Co. Ltd. Apparatus and process for producing slurry. 4,262,850, Cl. 241-17.000.

Nakagawa, Akira, to Nifco Inc. Tape reel. 4,262,856, Cl. 242-71.800.

Nakagawa, Kiyoshi: *See—*
Otaki, Yukio; Umeda, Kazuo; and Nakagawa, Kiyoshi, 4,262,481, Cl. 57-245.000.
Otaki, Yukio; Mineo, Masatoshi; Nakagawa, Kiyoshi; Nishiumi, Shiro; and Aratani, Yoshio, 4,263,368, Cl. 428-373.000.

Nakai, Gary T. Phonograph tone arm control device. 4,262,912, Cl. 369-41.000.

Nakajima, Tadashi; Rikimi, Kyoji; Soda, Yasuji; Kashima, Kenichi; Miyamoto, Akira; and Soejima, Yoshikazu, to Nippon Shoji Kaisha, Ltd. Therapeutic agent for consciousness disorder and perception and movement disorder. 4,263,286, Cl. 424-199.000.

Nakamichi Corporation: *See—*
Kobayashi, Kozo, 4,263,626, Cl. 360-60.000.

Nakamura, Shozo: *See—*
Kuroda, Michio; Nakamura, Shozo; Oshima, Ryoichiro; and Taki, Takamitsu, 4,262,485, Cl. 60-669.000.

Nakanishi, Katumi: *See—*
Yamamoto, Yasunobu; Ban, Hiroshi; Nakavishi, Katumi; Tomikawa, Ryoichi; Nakanishi, Katumi; Tomikawa, Ryoichi; and Kato, Toshitake, 4,262,788, Cl. 192-107.00M.

Nakano, Seizo: *See—*
Murashita, Masaki; Nakano, Seizo; Itoh, Hiroshi; Shiono, Shigeo; and Takahashi, Takeshi, 4,263,491, Cl. 200-146.00R.

Nakano, Takuo: *See—*
Matsubara, Akira; Sakai, Hideaki; Nakano, Takuo; and Suganuma, Toshio, 4,263,302, Cl. 424-258.000.

Nakavishi, Katumi: *See—*
Yamamoto, Yasunobu; Ban, Hiroshi; Nakavishi, Katumi; Tomikawa, Ryoichi; Nakanishi, Katumi; Tomikawa, Ryoichi; and Kato, Toshitake, 4,262,788, Cl. 192-107.00M.

Nalley, David J., to Singer Company, The. Crosshead for sabre saws and sabre saws incorporating same. 4,262,420, Cl. 30-392.000.

Nandagiri, Arun, to American Cyanamid Company. Hydroalcoholic aerosol hair sprays containing corrosion inhibitors. 4,263,275, Cl. 424-47.000.

Napoli, Joseph L., Jr.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,263,214, Cl. 260-397.200.

Naret, Joseph. Paddle racquet. 4,262,903, Cl. 273-67.00R.

Nartron Corp.: *See—*
Bull, Dale L.; and Rautiola, Norman A., 4,263,072, Cl. 156-73.100.

National Can Corporation: *See—*
Maeder, Edward G., 4,262,512, Cl. 72-45.000.

National Semiconductor Corporation: *See—*
Congdon, James S., 4,263,563, Cl. 330-265.000.

Nausedas, Joseph A.; and Eichin, Harry P., to Union Carbide Corporation. Bags wicketed on a flexible binding. 4,262,803, Cl. 206-554.000.

Navarro, Luis J.: *See—*
Dagostino, Thomas P.; Miller, Bruce E.; and Navarro, Luis J., 4,263,593, Cl. 340-728.000.

NBJ Corporation: *See—*
Jones, Jeffery C., 4,262,646, Cl. 123-556.000.

NCR Corporation: *See—*
Thomas, Jacob E., 4,263,504, Cl. 235-454.000.

Nebzydoski, John W.: *See—*
Sung, Rodney L.; Bialy, Jerzy J.; Dorn, Peter; Cullen, William P.; and Nebzydoski, John W., 4,263,015, Cl. 44-63.000.

Nedelec, Lucien; Torelli, Vesperto; and Fournex, Robert, to Roussel Uclaf. Novel 19-nor-steroids. 4,263,290, Cl. 424-243.000.

Needham, Donald G., to Phillips Petroleum Company. Solar energy absorption material or coating comprising an arylene sulfide polymer. 4,262,661, Cl. 126-452.000.

Needle Industries Ltd.: *See—*
Kenny, John, 4,262,982, Cl. 339-60.00R.

Nees, John M.: *See—*
Channing, Harry M.; Nees, John M.; and Eberle, William J., 4,263,379, Cl. 429-179.000.

Neha International: *See—*
Holland, Larry D., 4,262,653, Cl. 126-400.000.

Nelson, Bennie C., Jr., to Container Corporation of America. Display container. 4,262,804, Cl. 206-561.000.

Nelson, Byron G. Inhalator-breathing apparatus. 4,262,666, Cl. 128-203.230.

Nelson, Ivan L., to Southern Iowa Manufacturing Co. Rotary drilling device with pivoting drill head assembly. 4,262,754, Cl. 173-43.000.

Nelson, Robert D. Boat trailer stabilizing device. 4,262,922, Cl. 280-414.00R.

Nelson, Steven R.: *See—*
Creger, Todd D.; Nelson, Steven R.; and Wright, Paul L., 4,262,518, Cl. 72-393.000.

Nemit, Jeffrey T., to International Telephone and Telegraph Corporation. Large scale low-loss combiner and divider. 4,263,568, Cl. 333-127.000.

Neoloy Products, Inc.: *See—*
Prosen, Emil M., 4,263,045, Cl. 75-134.00C.

Neri, Joseph R. Advertising cravat holder. 4,262,393, Cl. 24-49.0CF.

Nethercutt, Henry W., to KEB Industries. Sterilizable holder for fiber optic surgical unit or the like. 4,262,800, Cl. 206-364.000.

Netlon Limited: *See—*
Mercer, Frank B., 4,263,246, Cl. 264-230.000.

Netzel, Philip C., to Electric Power Research Institute. Insulation spacer for gas-insulated transmission line with improved outer rim structure. 4,263,476, Cl. 174-156.000.

Neubauer, Josef: *See—*
Arnold, Werner; and Neubauer, Josef, 4,263,590, Cl. 340-672.000.

Neuking, Hartmut: *See—*
Tybus, Gerd; and Neuking, Hartmut, 4,263,026, Cl. 55-344.000.

Neutrogena Corporation: *See—*
Oclassen, Glenn A., 4,262,670, Cl. 128-269.000.

Nevamar Corporation: *See—*
Scher, Herbert I.; and Ungar, Israel S., 4,263,081, Cl. 156-279.000.

Nevins, Robert L. Method and apparatus for manufacturing a solar energy collector. 4,262,376, Cl. 7-170.000.

Nicholas, Earl C.: *See—*
Streeter, Robert R.; Whitehorn, Vincent J.; and Nicholas, Earl C., 4,263,330, Cl. 426-414.000.

Nicholas, Noel. Pressure operated electric switch and alarm system using such switch. 4,263,586, Cl. 340-568.000.

Nieder, Alvin E.: *See—*
Blink, James A.; and Nieder, Alvin E., 4,262,381, Cl. 14-2.600.

Nifco Inc.: *See—*
Nakagawa, Akira, 4,262,856, Cl. 242-71.800.

Nihon Cement Company Limited: *See—*
Ikeda, Hisashi; and Tsuchida, Shizuo, 4,263,264, Cl. 423-239.000.

Nikitina, Irina B.: *See—*
Bochkarev, Ellin P.; Voronin, Nikolai G.; Korobov, Oleg E.; Maslov, Vadim N.; and Nikitina, Irina B., 4,262,630, Cl. 118-715.000.

Nikki Co., Ltd.: *See—*
Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, 4,262,374, Cl. 4-537.000.

Nikles, Erwin: *See—*
Slongo, Mario; and Nikles, Erwin, 4,263,505, Cl. 260-45.8NZ.

Nippon Chemiphar Co., Ltd.: *See—*
Fujimoto, Yasuo; and Yamabe, Shigeru, 4,263,437, Cl. 546-89.000.

Nippon Colin Co., Ltd.: *See—*
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakumu, Tsunehito, 4,262,674, Cl. 128-680.000.

Nippon Electric Co., Ltd.: *See—*
Yorikane, Masaharu, 4,263,606, Cl. 357-71.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Chibana, Masanobu, 4,262,573, Cl. 84-1.010.
Kajihata, Munetoshi; and Aoyama, Koji, 4,263,520, Cl. 307-350.000.
Takanashi, Hiroyoshi, 4,263,631, Cl. 360-105.000.

Nippon Petroleum Refining Co., Ltd.: *See—*
Omori, Keizo; and Suzuki, Yasuhiro, 4,262,843, Cl. 236-15.00C.

Nippon Shoji Kaisha, Ltd.: *See—*
Nakajima, Tadashi; Rikimi, Kyoji; Soda, Yasuji; Kashima, Kenichi; Miyamoto, Akira; and Soejima, Yoshikazu, 4,263,286, Cl. 424-199.000.

Nippon Soken, Inc.: *See—*
Taguchi, Masahiro; and Inagaki, Mitsuo, 4,263,526, Cl. 310-263.000.

Nippondenso Co., Ltd.: *See—*
Makita, Kunio; and Sato, Masahiro, 4,262,526, Cl. 73-116.000.
Torii, Shinro; Tanaka, Toshio; Sasaki, Kouichi; Kato, Tsuneo; and Abe, Shigeya, 4,262,647, Cl. 123-651.000.

Nishide, Katsuhiko: *See—*
Nishimura, Yukuo; Haruta, Masahiro; Takatori, Yasushi; and Nishide, Katsuhiko, 4,263,601, Cl. 346-1.100.

Nishikawa, Yasuhisa: *See—*
Kanai, Takao; and Nishikawa, Yasuhisa, 4,262,547, Cl. 74-10.330.

Nishimura, Yukuo; Haruta, Masahiro; Takatori, Yasushi; and Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Image forming process. 4,263,601, Cl. 346-1.100.

Nishio, Yoshinori: *See—*
Tojo, Toru; and Nishio, Yoshinori, 4,262,974, Cl. 308-6.00R.

Nishiumi, Shiro: *See—*
Otaki, Yukio; Mineo, Masatoshi; Nakagawa, Kiyoshi; Nishiumi, Shiro; and Aratani, Yoshio, 4,263,368, Cl. 428-373.000.

Nishizawa, Masahiro: *See—*
Tomita, Yoshifumi; and Nishizawa, Masahiro, 4,263,384, Cl. 430-25.000.

Nissan Motor Company, Limited: *See—*
Fukuhara, Takao; and Saito, Kunihiro, 4,263,578, Cl. 340-52.00R.
Oka, Takashi; Matsuoka, Hideoki; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; and Mogi, Takaaki, 4,263,657, Cl. 364-561.000.

Nivarox S. A.: *See—*
Ramoni, Pierre; Espic, Luc; and Kurz, Wilfried, 4,262,732, Cl. 164-87.000.

Nodin, Christian: *See—*
Robillard, Jean J.; Riou, Claude R.; and Nodin, Christian, 4,263,105, Cl. 204-2.000.

Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, to Sumitomo Chemical Company, Limited. M-phenoxybenzamide derivatives. 4,263,039, Cl. 71-95.000.

Noguchi, Kohji: *See—*
Miyake, Tetsuya; Noguchi, Kohji; and Imamura, Kazuo, 4,263,439, Cl. 546-251.000.

Nomura, Hiroyuki: *See*—
Oka, Takashi; Matsuoka, Hideoki; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; and Mogi, Takaaki, 4,263,657, Cl. 364-561.000.

Nomura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, to Yamaha Hatsudoki Kabushiki Kaisha. Oil supply means for tanks containing blended fuel and oil. 4,262,710, Cl. 141-98.000.

Nomura, Takao; Sakamoto, Tatsuo; and Umemoto, Yoshiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auto ceiling panel. 4,263,356, Cl. 428-138.000.

Nomura, Takashi, to Kubota, Ltd. Farm vehicle. 4,262,765, Cl. 180-19.00R.

Nomura, Yoshifumi: *See*—
Tanabe, Kaoru; Nomura, Yoshifumi; Maeda, Mamoru; and Takagi, Mikio, 4,263,087, Cl. 156-613.000.

Nonura, Yasushi: *See*—
Sagusa, Hisayuki; Nonura, Yasushi; and Yabe, Ryohei, 4,263,512, Cl. 250-373.000.

Nooteboom, Urias G., to Blue Water Terminal Systems N.V. Mooring device. 4,262,620, Cl. 114-230.000.

Norddeutsche Affinerie: *See*—
Berndt, Gerhard; Bartsch, Adalbert; and Kolln, Olaf, 4,263,120, Cl. 204-273.000.

Norman, Bill. Weight-cushioning device for handles and method of constructing same. 4,262,385, Cl. 16-114.00R.

Nozawa, Nobuyuki: *See*—
Mikiya, Toshio; Mogaki, Tadahisa; and Nozawa, Nobuyuki, 4,262,374, Cl. 4-537.000.

NSK-Warner K. K.: *See*—
Koike, Kiyokazu, 4,262,396, Cl. 24-230.0AL.

Nuez, Jean-Paul: *See*—
Ballatore, Daniel; Delaporte, Francois; Lebesnerais, Gerard; and Nuez, Jean-Paul, 4,263,518, Cl. 307-303.000.

Nupro Company: *See*—
Danko, Oliver L.; Steiss, William C.; Amor, William H., Jr.; Tobbe, William P.; Gardner, Thomas J.; and Shufflebarger, Earl D., 4,262,880, Cl. 251-288.000.
Wujnovich, Ronald J.; Shufflebarger, Earl D.; and Steiss, William C., 4,263,140, Cl. 210-247.000.

Nutt, Wallace H., to Teledyne Canada, Limited. Ladder rack. 4,262,834, Cl. 224-324.000.

Nuzillat, Gerard; and Arnodo, Christian, to Thomson-CSF. Process for producing an integrated circuit. 4,263,340, Cl. 427-84.000.

Nyman, Frederick R.; and Smith, Thomas E., to RCA Corporation. Information record stampers. 4,262,875, Cl. 249-114.00R.

Obata, Shuichi, to Matsushita Electric Industrial Co., Ltd. Moving coil pick-up assembly for use in a record player. 4,263,483, Cl. 369-139.000.

Obrink, Olof H. Mounted device for panel elements, especially for buildings or the like. 4,262,465, Cl. 52-510.000.

Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E., 4,262,965, Cl. 299-2.000.

Occidental Petroleum Corporation: *See*—
Wickstrom, Gary H.; Knell, Everett W.; Shaw, Benjamin W.; and Wang, Yue G., 4,263,124, Cl. 208-8.00R.

Ochiai, Hirokazu: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.

Oclassen, Glenn A., to Neutrogena Corporation. Topical application of skin-penetrating medicament. 4,262,670, Cl. 128-269.000.

Oda, Kiyoshi, to Yoshida Kogyo K.K. Slider with lock for a slide fastener. 4,262,502, Cl. 70-68.000.

Oda, Ryoichi: *See*—
Komatsu, Makoto; and Oda, Ryoichi, 4,263,452, Cl. 562-487.000.

O'Dell, E. Wayne: *See*—
Morris, Robert C.; and O'Dell, E. Wayne, 4,262,497, Cl. 63-32.000.

O'ffill, Joseph M., to Shale Oil Science & Systems, Inc. Hydraulic valve. 4,262,878, Cl. 251-175.000.

Ogawa, Hiroshi: *See*—
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,262,722, Cl. 152-209.00R.

Ogawa, Tadashi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,263,581, Cl. 340-168.00B.

O'Halloran, Rosemary; and Winans, Esther D., to Exxon Research & Engineering Co. Oxazoline containing dispersants stabilized against oxidation with sulfur and fuels and lubricants containing same. 4,263,153, Cl. 252-475.000.

Ohara, Yutaka: *See*—
Yamaguchi, Takao; and Ohara, Yutaka, 4,263,656, Cl. 364-559.000.

Ohkawa, Tihiro; and Baker, Charles C., to United States of America, Energy. Toroidal magnet system. 4,263,096, Cl. 176-3.000.

Ohkawa, Tihiro, to General Atomic Company. Method and apparatus for driving a continuous current in a toroidal plasma. 4,263,097, Cl. 176-5.000.

Ohkuni, Shinichiro: *See*—
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, 4,262,722, Cl. 152-209.00R.

Ohlmeyer, Manfred; and Wilhelm, Jurgen, to Kernforschungszentrum Karlsruhe GmbH. Filter system for purifying gas or air streams. 4,263,028, Cl. 55-390.000.

Ohmuro, Shigeru: *See*—
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,263,675, Cl. 455-192.000.

Ohno, Nobuo: *See*—
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,263,463, Cl. 568-873.000.

Ohtani, Masami: *See*—
Kato, Nobuhiro; and Ohtani, Masami, 4,262,738, Cl. 165-25.000.

Oka, Takashi; Matsuoka, Hideoki; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; and Mogi, Takaaki, to Nissan Motor Company, Limited. Electronic trip meter for an automotive vehicle. 4,263,657, Cl. 364-561.000.

Okabe, Shinsei: *See*—
Murata, Michihiro; and Okabe, Shinsei, 4,263,576, Cl. 338-35.000.

Okado, Chihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Field control system for controlling induction machines. 4,263,541, Cl. 318-802.000.

Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, to Pioneer Electronic Corporation. Manual tuning pulse generator. 4,263,581, Cl. 340-168.00B.

Okuno, Yoshitoshi: *See*—
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,263,463, Cl. 568-873.000.

Okuyama, Takesi: *See*—
Mayumi, Masakatu; Mitooka, Kenji; Fujiwara, Sigeharu; and Okuyama, Takesi, 4,263,249, Cl. 264-334.000.

Okuyama, Yutaka: *See*—
Kazama, Takahiko; Hongo, Masahito; and Okuyama, Yutaka, 4,263,351, Cl. 427-355.000.

Oldham France S.A.: *See*—
Gautier, Alain L., 4,263,588, Cl. 340-632.000.

Olin Corporation: *See*—
Katz, Lawrence E., 4,263,312, Cl. 424-270.000.
Morse, Suzanne A., 4,263,160, Cl. 252-174.160.
Rothgery, Eugene F.; and Schroeder, Hansjuergen A., 4,263,297, Cl. 424-250.000.
Schnabel, Wilhelm J.; and Early, Robert M., 4,263,221, Cl. 260-453.0AM.

Ollinger, Janet; and Bayer, Horst O., to Rohm and Haas Company. Acaricidal, insecticidal, and nematocidal phosphoramidothioates. 4,263,288, Cl. 424-210.000.

Olson, Dennis G.; and Wistreich, Hugo E., to B. Heller & Company. Method for improving taste and stability of sausage. 4,263,329, Cl. 426-310.000.

Olson, Donald N., to United States of America, Army. Pre-wrapped two-piece ring airfoil projectile of non-hazardous material. 4,262,597, Cl. 102-92.600.

Olympia Werke AG: *See*—
Bettin, Hubertus; and Bornemann, Rainer, 4,263,537, Cl. 318-561.000.

Olympus Optical Company, Ltd.: *See*—
Miyazaki, Kensaku, 4,262,426, Cl. 33-189.000.

Omori, Keizo; and Suzuki, Yasuhiro, to Nippon Petroleum Refining Co., Ltd. Method of and apparatus for controlling the feed amount of air for combustion in a natural draft-type heating furnace. 4,262,843, Cl. 236-15.00C.

O'Neal, Larry. Device for mounting an inflatable dock seal. 4,262,458, Cl. 52-2.000.

Onishi, Hiroshi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,263,581, Cl. 340-168.00B.

Onisko, Bruce L.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,263,214, Cl. 260-397.200.

Onopchenko, Anatoli: *See*—
Schulz, Johann G. D.; and Onopchenko, Anatoli, 4,263,453, Cl. 562-543.000.

Ooms, Hans; and Smidt, Joseph J. M. Apparatus for closing boxes. 4,262,469, Cl. 53-76.000.

Opresik, John; and Spector, George. Martian flyer or earth U.F.O. 4,262,911, Cl. 273-428.000.

Orem, Donald E.; Holmes, Vernon P.; Bacsanyi, Thomas J.; and Harmon, Edward J., to Ransburg Corporation. Dynamic imbalance determining system. 4,262,536, Cl. 73-462.000.

Orenstein, Henry. Controllable response systems. 4,262,445, Cl. 46-145.000.

Orgill, Rodney H.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,263,650, Cl. 364-200.000.

Orion Research Incorporated: *See*—
Diggens, Albert A.; and Ross, James W., Jr., 4,263,104, Cl. 204-1.00T.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
Pellegri, Alberto, 4,263,107, Cl. 204-99.000.

Oshima, Ryoichiro: *See*—
Kuroda, Michio; Nakamura, Shozo; Oshima, Ryoichiro; and Taki, Takamitsu, 4,262,485, Cl. 60-669.000.

Otaki, Yukio; Umeda, Kazuo; and Nakagawa, Kiyoshi, to Toray Industries, Inc. Spun yarn-like high bulky textured yarns and process for producing same. 4,262,481, Cl. 57-245.000.

Otaki, Yukio; Mineo, Masatoshi; Nakagawa, Kiyoshi; Nishiumi, Shiro; and Aratani, Yoshio, to Toray Industries, Inc. Potentially bulky yarn and process for producing same. 4,263,368, Cl. 428-373.000.

Otawara, Yasuhiko, to Hitachi, Ltd. Method of detecting rubbing between rotating body and stationary body. 4,262,538, Cl. 73-593.000.

Ottestad, Jack B. Tool holder for impact tool. 4,262,917, Cl. 279-4.000.

Oury, Robert F., to Rotec Industries, Inc. Swivel arm concrete placer. 4,262,696, Cl. 137-615.000.

Outboard Marine Corporation: *See*—
Cavil, David T.; and Krueger, William R., 4,262,643, Cl. 123-416.000.
Dretzka, Robert G.; Holt, James L.; and Payne, Guy D., 4,262,622, Cl. 440-1.000.
Haft, Gerald; and Scharpf, Otto H., 4,262,548, Cl. 74-44.000.

Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., to Xicor, Inc. Nonvolatile static random access memory system. 4,263,664, Cl. 365-185.000.

Owens-Corning Fiberglas Corporation: *See*—
Michalek, Jan K., 4,263,033, Cl. 65-4.00R.

Owens-Illinois, Inc.: *See*—
Frissora, Joseph R., 4,262,658, Cl. 126-443.000.

Ozawa, Yuji: *See*—
Takeda, Makoto; Taniyama, Eiji; Ozawa, Yuji; Imanari, Makoto; Takahashi, Kunimasa; and Iwane, Hiroshi, 4,263,457, Cl. 568-316.000.

P.H.-Tech, Inc.: *See*—
Dallaire, Raymond, 4,262,451, Cl. 49-425.000.

Palluet, Jean-Noel, to Compagnie Generale de Radiologie. Apparatus for panoramic radiography. 4,263,513, Cl. 250-439.00P.

Pampalone, Thomas R., to RCA Corporation. Method for the manufacture of multi-color microlithographic displays. 4,263,385, Cl. 430-25.000.

Panelo, Alfredo A.: *See*—
Simmons, David H.; and Panelo, Alfredo A., 4,263,642, Cl. 363-17.000.

Pankratova, Lidia A.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.

Papadakis, George M. Breakwater and power generator. 4,263,516, Cl. 290-53.000.

Paparatto, Pietro: *See*—
Vargiu, Silvio; Paparatto, Pietro; and Parodi, Antonio, 4,263,195, Cl. 260-31.8XA.

Paper Converting Machine Company: *See*—
Ellingson, Robert M., 4,262,950, Cl. 294-67.0AA.

Papsdorf, Peter: *See*—
Primke, Konrad; and Papsdorf, Peter, 4,263,468, Cl. 13-2.00P.

Parachutes Australia Pty. Ltd.: *See*—
Smith, David R., 4,262,865, Cl. 244-151.00A.

Parada, Maya; and Rudolph, Marvin J., to General Foods Corporation. Tableted gasified candy. 4,263,328, Cl. 426-103.000.

Paragon Resources, Inc.: *See*—
Butzen, Thomas J., 4,262,652, Cl. 126-285.00B.

Parekh, Mansukh G., to Ciba-Geigy Corporation. Process for the manufacture of selected phosphonates. 4,263,232, Cl. 260-989.000.

Parfree, Colin S.; Gunn, Duncan A.; and Crownshaw, John C., to International Standard Electric Corporation. High pressure gland for optical fibres and/or electrical conductors. 4,262,913, Cl. 277-1.000.

Parigot, Georges; and Passerat, Jean-Louis, to Societe Europeenne des Produits Refractaires. Machine for grinding hard workpieces. 4,262,453, Cl. 51-93.000.

Parish, Carl D., to K-M-P Pump Company, Inc. Ground wheel and plowing implement connected thereto for filling wheel tracks. 4,262,752, Cl. 172-574.000.

Park Management and Development Co.: *See*—
Smith, Jay, III; Hedgcoth, Virgile L.; and Grimm, Thomas H., 4,262,623, Cl. 118-31.500.

Parker, Ernest G.: *See*—
Swinkels, Godefridus M.; Hirsch, Horst E.; Fairweather, Michael J.; and Parker, Ernest G., 4,263,109, Cl. 204-119.000.

Parks, Richard E.: *See*—
Jacobson, Jon O.; and Parks, Richard E., 4,262,825, Cl. 222-503.000.

Parodi, Antonio: *See*—
Vargiu, Silvio; Paparatto, Pietro; and Parodi, Antonio, 4,263,195, Cl. 260-31.8XA.

Parrish, Henry H.: *See*—
Chiu, Ran F.; Parrish, Henry H.; Kromer, Philip F., III; and Kao, Ming L., 4,263,671, Cl. 375-15.000.

Paschke, Manfred; Wagener, Klaus; and Wald, Maximilian, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of extracting uranium from sea water. 4,263,403, Cl. 435-172.000.

Pass, James S. Folder type lettering guide. 4,262,422, Cl. 33-41.00B.

Passerat, Jean-Louis: *See*—
Parigot, Georges; and Passerat, Jean-Louis, 4,262,453, Cl. 51-93.000.

Patel, Mahesh S., to Eutectic Corporation. Flame spray powder mix. 4,263,353, Cl. 427-423.000.

Patel, Narendrakumar M. Lettering scale. 4,262,428, Cl. 33-477.000.

Patil, Babgaunda A.; and Przybylinski, Phillip G., to Pullman Incorporated. Covered hopper car partition attachment stiffness sheet modifier. 4,262,602, Cl. 105-248.000.

Patil, Babgaunda A.; Tuck, Richard L., Sr.; and Naik, Dilip T., to Pullman Incorporated. Railway car roof hatch cover lock. 4,262,604, Cl. 105-377.000.

Pauls, Mathias, to BASF Aktiengesellschaft. Preparation of dimensionally stable one-component polyurethane foams using a two-compartment pressure pack containing an isocyanate-terminated prepolymer in the inner container and pressure medium in the outer container. 4,263,412, Cl. 521-114.000.

Paulson, Philip D., to Inglis Limited. Safety latch for washer closure. 4,262,945, Cl. 292-89.000.

Pauly, Marc, to Laboratoires Serobiologiques S.A. Synthesis of 4,4'-dicyano-polyhalo-diphenoxyalkanes. 4,263,223, Cl. 260-465.00F.

Paust, Joachim: *See*—
Schmidt, Wolfram; and Paust, Joachim, 4,263,454, Cl. 562-587.000.

Payne, Guy D.: *See*—
Dretzka, Robert G.; Holt, James L.; and Payne, Guy D., 4,262,622, Cl. 440-1.000.

Pease, William C., III: *See*—
Einglett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., 4,262,390, Cl. 19-50.000.

Peash, Douglas E., to Boeing Company, The. Wire Clamp. 4,262,391, Cl. 24-18.000.

Peddle, Charles I.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,263,650, Cl. 364-200.000.

Pedersen, Arne M.; and Sonder, Henning, to Chr. F. Petri's Eftf. I/S. Process for the production of sugarless chewing gum. 4,263,327, Cl. 426-3.000.

Pedersen, Peder: *See*—
Hansen, Karl E.; and Pedersen, Peder, 4,263,049, Cl. 106-93.000.

Pedi, Mario J. Slicing apparatus having variable thickness control. 4,262,565, Cl. 83-71.000.

Pellegri, Alberto, to Oronzio de Nora Impianti Elettrochimici S.p.A. Electrolytic apparatus and process. 4,263,107, Cl. 204-99.000.

Pennwalt Corporation: *See*—
Dyball, Christopher J., 4,263,417, Cl. 525-169.000.

Pentagames, Inc.: *See*—
Ginsberg, Allen; Huss, Martin F.; and Lynn, Joseph, 4,262,907, Cl. 273-249.000.

Pentel Kabushiki Kaisha: *See*—
Takahashi, Hiromichi; and Sugino, Tadaaki, 4,263,592, Cl. 340-707.000.

Pentith, Gerald R. O., to Brockadale Developments Limited. Agricultural machine. 4,262,478, Cl. 56-341.000.

Perino, Didier: *See*—
Lewiner, Jacques; Dreyfus, Gerard; and Perino, Didier, 4,263,589, Cl. 340-638.000.

Perkins, Neale A., to Safariland Ltd. Inc. Vest-type shoulder holster for carrying firearms. 4,262,832, Cl. 224-206.000.

Permar, Elbert R. Method for cleaning a paint roller pad. 4,263,055, Cl. 134-33.000.

Perrett, Thomas R., to Synthes AG. Support post body. 4,262,799, Cl. 206-363.000.

Perretti, Patrick J.: *See*—
Becker, Joseph T.; Doran, Byron L.; and Perretti, Patrick J., 4,262,909, Cl. 273-323.000.

Perrot, Jacques: *See*—
Thominet, Michel; and Perrot, Jacques, 4,263,316, Cl. 424-274.000.

Perry, George J.: *See*—
Kuehnle, Manfred R.; and Perry, George J., 4,262,998, Cl. 355-10.000.

Pershin, Gely G.: *See*—
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Hoyer, Peter, 4,262,951, Cl. 294-89.000.

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Bertus, Brent J.; McKay, Dwight L.; and Mark, Harold W., 4,263,130, Cl. 208-113.000.
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King, William R., 4,263,091, Cl. 159-44.000.
Lewis, Ronnie L.; and Sherk, Fred T., 4,263,451, Cl. 562-481.000.
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Piccone, James. Disposal device for animals. 4,262,634, Cl. 119-1.000.

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Pierce, William C., to Lear Siegler, Inc. Suspension with resilient reaction bar. 4,262,929, Cl. 280-713.000.

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Pignan, Jean-Louis; and Cusset, Georges, to Produits Chimiques Ugine Kuhlmann. Device for the recovery of gases formed during the electrolysis of alkali metal chlorides. 4,263,117, Cl. 204-230.000.

Pigott, Stanley W., to BICC Limited. Continuous extrusion of metals. 4,262,513, Cl. 72-45.000.

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Ping, David T.: *See*—
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Pochan, John M.: *See*—
Schank, Richard L.; and Pochan, John M., 4,263,388, Cl. 430-59.000.

Pombo, Melvin M., to Boots Hercules Agrochemicals Co. Process for hydrolyzing 5-isothiocyano-5,6-dihydro-dicyclopentadiene. 4,263,226, Cl. 564-459.000.

Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., to Beecham Group Limited. β-Lactam antibiotics, a process for their preparation and their use in pharmaceutical compositions. 4,263,314, Cl. 424-274.000.

Popp, Karl; and Schaub, Heinz, to Sulzer Brothers Limited. Loom. 4,262,706, Cl. 139-103.000.

Porter, Richard W., to Bethlehem Steel Corporation. Wet quenching of incandescent coke. 4,263,099, Cl. 201-39.000.

Possis Corporation: *See*—
Dammar, Raymon H., 4,262,852, Cl. 242-7.030.
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Postell, James M., Jr., to Richtex Corporation. Apparatus and methods for forming simulated old brick. 4,263,240, Cl. 264-71.000.

Potratz, Robert P. Anti-collaring structure for impact bit. 4,262,762, Cl. 175-401.000.

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Le Salver, Robert; and Poupard, Dominique, 4,262,886, Cl. 267-8.00R.

Powell, Michael W., to Motorola, Inc. VMOS ROM Array. 4,263,663, Cl. 365-182.000.

Powers, Earl W., to Dependable-Fordath, Inc. Strike off method for automatically leveling and compacting sand in mold boxes of varying heights. 4,262,730, Cl. 164-4.000.

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Franz, Helmut, 4,263,371, Cl. 428-432.000.
Grove, William S., 4,263,041, Cl. 71-108.000.
Krass, Dennis K., 4,263,227, Cl. 564-256.000.
Straka, Daniel C., 4,263,362, Cl. 428-258.000.
Temple, Chester S., 4,263,082, Cl. 156-309.300.
Valimont, James L., 4,263,350, Cl. 427-352.000.
Wagner, William E.; and Davis, James A., 4,263,335, Cl. 427-29.000.

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Premix, Inc.: *See*—
McErlane, John C., 4,262,953, Cl. 296-1.00S.

Prenger, Vivian L., to Accent Industries. Plant hanger. 4,262,873, Cl. 248-318.000.

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Prewo, Karl M., to United Technologies Corporation. Discontinuous graphite fiber reinforced glass composites. 4,263,367, Cl. 428-338.000.

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Price, William J. Household security device. 4,262,446, Cl. 49-35.000.

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Prosen, Emil M., to Neoloy Products, Inc. Stainless dental alloy for application of low-fusing opaqueing porcelain. 4,263,045, Cl. 75-134.00C.

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Prudhon, Francois; Scicluna, Augustin; and Verdier, Jean-Michel, to Rhone-Poulenc Industries. Method of intimate contacting/separating

of plural phases and phase contactor/separator apparatus therefor. 4,263,234, Cl. 261-153.000.
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Pugh, Emerson W.: *See—*
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Pullman Incorporated: *See—*
Miller, Roy W., 4,262,601, Cl. 105-241.200.
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Puttock, Michael A.; Felauer, Ethel E.; and Graham, Bruce A., to Uniroyal Ltd. Process for the preparation of 2,3-dihydro-5,6-diphenyl-1,4-oxathiin. 4,263,442, Cl. 549-14.000.
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Ramoni, Pierre; Espic, Luc; and Kurz, Wilfried, to Nivarox S. A. Apparatus and process relating to manufacturing of a filament directly from a molten material. 4,262,732, Cl. 164-87.000.
Rampelberg, Victor H., to Avery International Corporation. In-press transfer painting of hardboard. 4,263,077, Cl. 156-238.000.
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Gibson, Walter G.; Liu, Frank C.; and Muterspaugh, Max W., 4,263,611, Cl. 358-23.000.
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Hunka, George W., 4,263,555, Cl. 328-165.000.
Ipri, Alfred C., 4,263,057, Cl. 148-1.500.
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Reed, Samuel F., Jr., to Rohm and Haas Company. Polymeric adsorbents from macroreticular polymer beads. 4,263,407, Cl. 521-33.000.
Reeds, John W., Jr., to Hughes Aircraft Company. Electron beam system. 4,263,514, Cl. 250-492.00A.
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Renegar, Charles G., to Hasbro Industries, Inc. Method for striping pencils. 4,263,348, Cl. 427-286.000.
Rentmeester, Kenneth R.; Eike, Eugene F.; Echternach, Gerald G.; and Stukas, Leo A., to American Can Company. Hot spray. 4,263,338, Cl. 427-55.000.
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Ries, Walter, to Braunschweigische Maschinenbauanstalt. Apparatus for drying sludge. 4,263,090, Cl. 159-16.00R.
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Nakajima, Tadashi; Rikimi, Kyoji; Soda, Yasuji; Kashima, Kenichi; Miyamoto, Akira; and Soejima, Yoshikazu, 4,263,286, Cl. 424-199.000.
Ringfeder GmbH: *See*—
Jansen, Harry, 4,262,887, Cl. 267-9.00A.
Jansen, Harry; and Kerntopf, Bernd, 4,262,888, Cl. 267-9.00A.
Riou, Claude R.: *See*—
Robillard, Jean J.; Riou, Claude R.; and Nodin, Christian, 4,263,105, Cl. 204-2.000.
Risbec, Andre: *See*—
Lazerand, Jean; and Risbec, Andre, 4,262,583, Cl. 493-444.000.
Roalstad, Walter L.; and Yeager, Ernest W. Intramedullary compression device. 4,262,665, Cl. 128-92.0BC.
Robert Bosch BmbH: *See*—
Holzbaur, Siegfried; and Eckert, Konrad, 4,263,235, Cl. 261-89.000.
Robert Bosch GmbH: *See*—
Grob, Ferdinand; and Rabus, Friedrich, 4,262,557, Cl. 74-861.000.
Seiler, Hartmut, 4,263,562, Cl. 330-257.000.
Voegle, Guenther, 4,263,251, Cl. 264-503.000.
Roberts Consolidated Industries, Inc.: *See*—
Hill, Harvey J.; and Spiegelstein, Wolfgang, 4,262,418, Cl. 30-287.000.
Roberts, Patricia M.: *See*—
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,263,314, Cl. 424-274.000.
Roberts, Royce G. Protector removal tool. 4,262,410, Cl. 29-560.000.
Robillard, Jean J.; Riou, Claude R.; and Nodin, Christian, to ISSEC SA. Electrosensitive recording material and process. 4,263,105, Cl. 204-2.000.
Robinson, Edward A.: *See*—
Carravetta, James J.; and Robinson, Edward A., 4,262,625, Cl. 118-101.000.
Robinson, Lee F., to RTL Contactor Holding S.A. Treatment process. 4,263,147, Cl. 210-685.000.
Robroy Industries: *See*—
Madej, Edward A., 4,262,409, Cl. 29-526.00R.
Roccaforte, Harry I., to Champion International Corporation. Device for detecting tampering with a capped container and blank therefor. 4,262,814, Cl. 215-232.000.
Rochefort, Malcolm P.; and Gavens, Paul D., to Imperial Chemical Industries Limited. Olefine polymerization catalyst. 4,263,168, Cl. 252-429.00B.
Rockwell International Corporation: *See*—
Chen, Thomas T.; and Gergis, Isoris S., 4,263,661, Cl. 365-15.000.
Glass, Howard L.; Elliott, Michael T.; and Henry, Rodney D., 4,263,374, Cl. 428-693.000.
Tung, Chiang-Ying M.; and Hamermesh, Charles L., 4,263,410, Cl. 521-106.000.
Wang, Cheng-Chi; and Vanderwyck, August H. B., 4,263,065, Cl. 148-171.000.
Yao, Shi-Kay, 4,262,996, Cl. 350-96.190.
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Hansen, Karl E.; and Pedersen, Peder, 4,263,049, Cl. 106-93.000.
Rocton, Lucien, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Sealed connection between a coaxial underwater cable and an electronic apparatus. 4,263,473, Cl. 174-70.00S.
Rodder, Jerome A. Respirator valve. 4,262,689, Cl. 137-246.120.
Rodenkirch, Bruce L., to General Tire & Rubber Company, The. Polyester inserts in single-ply radial tires. 4,262,725, Cl. 152-354.00R.
Roe, Vernon S., to Redland Roof Tiles Limited. Roofing tiles. 4,262,466, Cl. 52-550.000.
Roeder, Charles L.; Siefert, William J.; and Theijsmeijer, Frederik, to Rexnord, Inc. Apparatus for coating the inside of pipe. 4,262,627, Cl. 118-318.000.
Roessler, Peter: *See*—
Mohring, Edgar; Stadler, Peter; and Roessler, Peter, 4,263,296, Cl. 424-249.000.
Roffe, Gerald A.; and Trucco, Horacio A. Apparatus for the premixed gas phase combustion of liquid fuels. 4,262,482, Cl. 60-736.000.
Roga, Robert C.: *See*—
Buck, Charles E.; and Roga, Robert C., 4,263,363, Cl. 428-284.000.
Rogers, Edward A., Jr., to Goodyear Tire & Rubber Company, The. Process of preparing styrenated diphenylamine. 4,263,456, Cl. 564-315.000.
Rohco, Inc.: *See*—
Guhde, Donald J.; and Burdt, Dale M., 4,263,059, Cl. 148-6.200.
Rohm and Haas Company: *See*—
Emmons, William D.; and Sperry, Peter R., 4,263,372, Cl. 428-446.000.
Ollinger, Janet; and Bayer, Horst O., 4,263,288, Cl. 424-210.000.
Reed, Samuel F., Jr., 4,263,407, Cl. 521-33.000.
Rohrig, Adalbert, to Concast AG. Apparatus for removing and simultaneously turning cut-to-length hot strand sections from the delivery roller tables of a multistrand continuous casting installation. 4,262,733, Cl. 164-412.000.
Roitberg, Gennady I.: *See*—
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A., 4,263,185, Cl. 260-17.40R.
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., to Merck & Co., Inc. 10,11-Dihydrodibenzo[b,f][1,4]thiazepine carboxylic acids esters and amides thereof. 4,263,207, Cl. 260-239.30T.
Roley, Robert D., to Caterpillar Tractor Co. End face seal assembly. 4,262,914, Cl. 277-84.000.
Rollmann, Louis D., to Mobil Oil Corporation. Preparation and use of reactive dispersions. 4,263,126, Cl. 208-14.000.
Rolls-Royce Limited: *See*—
Jubb, Albert; and Stansbury, Eric W., 4,262,484, Cl. 60-641.000.
Medlar, Tony, 4,263,496, Cl. 219-121.0ED.
Russell, Robert L. J., 4,262,486, Cl. 60-746.000.
Romance, Joseph S. Immersion heater with thermal cutoff. 4,263,499, Cl. 219-331.000.
Rooney, Clarence S.: *See*—
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,263,207, Cl. 260-239.30T.
Roos, Ernst; Jeblick, Werner; and Hurnik, Helmut, to Bayer Aktiengesellschaft. Blowing agent combination comprising azodicarbonamide, zinc oxide and a benzenethiol sulphonic acid derivative. 4,263,165, Cl. 252-350.000.
Roos, William G.: *See*—
Flack, Max L.; and Roos, William G., 4,262,507, Cl. 70-432.000.
Rosch, Gunter: *See*—
Martini, Thomas; Mengler, Helmut; Rosch, Gunter; and Hohlfeld, Gunter, 4,263,176, Cl. 252-543.000.
Pintschovius, Ulrich; Schinzel, Erich; and Rosch, Gunter, 4,263,441, Cl. 548-220.000.
Rose, Andrew M.; and Touchton, James J., to Sperry Rand Corporation. Electronic tachometer. 4,263,627, Cl. 360-75.000.
Rosenblatt, Aaron A.; and Mann, Walter J., to Adkins, James C. Pressure sensitive indicating device. 4,262,529, Cl. 73-146.800.
Rosler, Richard S.: *See*—
Thompson, Stephen W.; Smith, Harry G.; and Rosler, Richard S., 4,263,336, Cl. 427-45.100.
Ross, Donald R. Process for calcining a material. 4,263,163, Cl. 252-301.10W.
Ross, James W., Jr.: *See*—
Diggens, Albert A.; and Ross, James W., Jr., 4,263,104, Cl. 204-1.00T.
Rossi, Alberto: *See*—
Ferrini, Pier G.; Goschke, Richard; Sallmann, Alfred; and Rossi, Alberto, 4,263,455, Cl. 564-305.000.
Rotaflex Limited: *See*—
Heritage, Robert, 4,262,980, Cl. 339-1.00L.
Rotec Industries, Inc.: *See*—
Oury, Robert F., 4,262,696, Cl. 137-615.000.
Rothe, Hans-Jochen; Freund, Peter; Gey, Werner; and Heinze, Helmut, to Zimmer Aktiengesellschaft. Process for production of polyester polymer for food packing. 4,263,425, Cl. 528-309.000.
Rothenbucher, Robert K. Header support for heat exchanger. 4,262,741, Cl. 165-68.000.
Rothgery, Eugene F.; and Schroeder, Hansjuergen A., to Olin Corporation. 3-Lower alkoxy-6-trichloromethylpyridazines and their use as fungicides. 4,263,297, Cl. 424-250.000.
Roussel Uclaf: *See*—
Nedelec, Lucien; Torelli, Vesperto; and Fournex, Robert, 4,263,290, Cl. 424-243.000.
Roux, Christiane. Artificial joints, in particular coxo-femoral joints. 4,262,369, Cl. 3-1.912.
Royal Industries, Inc.: *See*—
Grear, Richard S., 4,262,751, Cl. 172-271.000.
RTL Contactor Holding S.A.: *See*—
Robinson, Lee F., 4,263,147, Cl. 210-685.000.
Rudolph, Marvin J.: *See*—
Parada, Maya; and Rudolph, Marvin J., 4,263,328, Cl. 426-103.000.

Rudy, Thomas P.: *See—*
Bain, Leland S.; and Rudy, Thomas P., 4,263,071, Cl. 149-19.900.

Ruhrchemie Aktiengesellschaft: *See—*
Weber, Jurgen; and Springer, Helmut, 4,263,460, Cl. 568-457.000.

Runciman, Herbert M., to Barr & Stroud Limited. Variable temperature test target. 4,263,515, Cl. 250-494.000.

Runnels, Joe N.: *See—*
Gupta, Alankar; and Runnels, Joe N., 4,262,495, Cl. 62-402.000.

Rupp, Roland: *See—*
Pilz, Volker; and Rupp, Roland, 4,263,253, Cl. 422-1.000.

Rusco Industries, Inc.: *See—*
Riegelman, Harry M.; and Madison, Vernon E., 4,262,449, Cl. 49-404.000.

Russell, B. Carson. Strapper feed conveyor. 4,262,587, Cl. 100-4.000.

Russell, Robert J., to Mail-Ex Corporation. Envelope processing machine. 4,262,471, Cl. 53-381.00R.

Russell, Robert L. J., to Rolls-Royce Limited. Combustion chambers. 4,262,486, Cl. 60-746.000.

Russo, Luigi; and Spaggiari, Luciano, to Alfa Romeo S.p.A. Instrument for measuring spontaneous ignition in an internal combustion engine. 4,262,524, Cl. 73-35.000.

Ryan, Joseph L.: *See—*
Stafford, John P.; Slater, Richard A.; Kobs, Frederick E.; and Ryan, Joseph L., 4,263,648, Cl. 364-200.000.

Ryder, Donald F. Disinfection system for a pressurized flush toilet in a recreational vehicle or the like. 4,262,372, Cl. 4-222.000.

Ryer, Jack; Girgenti, Salvatore J.; and Winans, Esther D., to Exxon Research & Engineering Co. Multifunctional thiocyanate amine salt additive for fuels and lubricating oils and compositions containing said additive. 4,263,154, Cl. 252-47.500.

S & C Electric Company: *See—*
Bernatt, Joseph; and Vojta, Karel E., 4,263,572, Cl. 335-26.000.

S I P A (Societe Industrielle des Plastiques de l'Atlantique): *See—*
Faisant, Gilles; and Reverdy, Gaston, 4,262,467, Cl. 52-590.000.

S.R.M. Hydromekanik Aktiebolag: *See—*
Ahlen, Karl G.; and Ketola, Rainer B., 4,262,554, Cl. 74-677.000.

Sabato, Joseph G., to General Electric Company. Self-adjusting inspection apparatus. 4,262,425, Cl. 33-178.00R.

Safariland Ltd. Inc.: *See—*
Perkins, Neale A., 4,262,832, Cl. 224-206.000.

Safe Lite, Inc.: *See—*
Scherer, John J., 4,262,438, Cl. 40-607.000.

Sagal, Amil. Fishing rig. 4,262,440, Cl. 43-16.000.

Saget, Pierre C., to La Parmentiere P. Blache & Cie. Apparatus for holding an animal's head severed from its body. 4,262,386, Cl. 17-44.000.

Sagusa, Hisayuki; Nonura, Yasushi; and Yabe, Ryohei, to Hitachi, Ltd. Colorimetric method for liquid sampler including disturbing chromogens. 4,263,512, Cl. 250-373.000.

Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. 7 Alpha-methoxycephalosporins and pharmaceutical composition comprising the same. 4,263,292, Cl. 424-246.000.

Saint-Gobain Industries: *See—*
Battigelli, Jean A.; and Bouquet, Francois, 4,263,007, Cl. 425-371.000.
Sistermann, Klaus; and Gartner, Hans, 4,263,034, Cl. 65-6.000.

Saito, Kunihiro: *See—*
Fukuhara, Takao; and Saito, Kunihiro, 4,263,578, Cl. 340-52.00R.

Saito, Takashi; and Watanabe, Tsuyoshi, to Canon Kabushiki Kaisha. Liquid development process with porous elastic development cleaning roller. 4,263,391, Cl. 430-125.000.

Saito, Toshihiro; Tsutsumi, Yukihiro; and Arai, Shoji, to Toyoda Soda Manufacturing Co., Ltd. Process for producing alcohols. 4,263,449, Cl. 560-263.000.

Sakai, Hideaki: *See—*
Matsubara, Akira; Sakai, Hideaki; Nakano, Takuo; and Suganuma, Toshio, 4,263,302, Cl. 424-258.000.

Sakamoto, Shigetoshi, to Hoshizaki Electric Co., Ltd. Method of and apparatus for producing pure water. 4,262,489, Cl. 62-124.000.

Sakamoto, Tatsuo: *See—*
Nomura, Takao; Sakamoto, Tatsuo; and Umemoto, Yoshiro, 4,263,356, Cl. 428-138.000.

Sakamoto, Tomonori: *See—*
Kimura, Yukichi; Kanamori, Takeshi; and Sakamoto, Tomonori, 4,263,326, Cl. 424-331.000.

Sakimoto, Seiichiro; and Yoshioka, Yoshiaki, to Showa Denko K.K. Aqueous emulsion of multi-component synethetic resin and process for production thereof. 4,263,193, Cl. 260-29.6RB.

Sakurado, Kenichi: *See—*
Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakumu, Tsunehito, 4,262,674, Cl. 128-680.000.

Sakuranaka, Toru: *See—*
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,262,645, Cl. 123-502.000.

Sallmann, Alfred: *See—*
Ferrini, Pier G.; Goschke, Richard; Sallmann, Alfred; and Rossi, Alberto, 4,263,455, Cl. 564-305.000.

Samcoe Holding Corporation: *See—*
Cecere, Andrew P., 4,262,397, Cl. 26-84.000.

Sampson, Mark A. Bell trap and check valve combination. 4,262,692, Cl. 137-433.000.

Samsonite Corporation: *See—*
Workman, David E.; Bromley, Robert L.; Burzen, Don N.; and McNeill, Judith K., 4,262,685, Cl. 132-79.00G.

Samuelian, Richard W. Fixture for converting luggage for articulated movement. 4,262,780, Cl. 190-18.00A.

Samuelsson, Gustav B. R.: *See—*
Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., 4,263,323, Cl. 424-324.000.
Carlsson, Enar I.; Samuelsson, Gustav B. R.; and Lundgren, Bo T., 4,263,325, Cl. 424-330.000.

Sandell, Bertil. Method for the manufacturing of fibre reinforced building structures surface coatings. 4,263,346, Cl. 427-196.000.

Sandino, Hector M. Unitary molded skate chassis. 4,262,918, Cl. 280-11.260.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,262,377, Cl. 8-149.100.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,263,008, Cl. 8-115.700.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Method of continuously effecting the wet heat treatment of a cloth. 4,262,377, Cl. 8-149.100.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Method and apparatus for continuously carrying out weight reduction and mercerization of cloth material. 4,263,008, Cl. 8-115.700.

Sandow, Jurgen K.: *See—*
von der Ohe, Marianne; Sandow, Jurgen K.; and von Rechenberg, Wolfrad, 4,263,282, Cl. 424-177.000.

Sandoz Ltd.: *See—*
Schenker, Erhard, 4,263,298, Cl. 424-250.000.

Sandre, Andrew M.: *See—*
Bichsel, Stanley E.; Wang, Yueh; and Sandre, Andrew M., 4,263,052, Cl. 127-41.000.

Sarkisian, Ira. Paint shield roll. 4,263,355, Cl. 428-124.000.

Sarkissian, Berge, to Uniroyal, Inc. Low pressure and run-flat warning system for a pneumatic tire. 4,262,724, Cl. 152-330.0RF.

Sasaki, Kouichi: *See—*
Torii, Shinro; Tanaka, Toshio; Sasaki, Kouichi; Kato, Tsuneo; and Abe, Shigeya, 4,262,647, Cl. 123-651.000.

Sasser, Bill H.: *See—*
Bellee, Ernest C.; Immell, Raymond G.; and Sasser, Bill H., 4,263,598, Cl. 343-700.0MS.

Satake, Shozo; and Takizawa, Katsuhiko, to Hitachi, Ltd. Method of testing pulse delay time. 4,263,545, Cl. 324-57.0PS.

Sathyakumar, Rajabushanan, to TSI Incorporated. Differential doppler technique for on-axis backscatter measurements. 4,263,002, Cl. 356-349.000.

Sato, Koichi: *See—*
Jikihara, Kazuo; Itoh, Shigekazu; Takayama, Shuichi; Sato, Koichi; Kimura, Ichiro; and Chiyomaru, Isao, 4,263,040, Cl. 71-100.000.

Sato, Masahiro: *See—*
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Sato, Reisuke: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,263,581, Cl. 340-168.00B.

Sato, Tadashi; and Tanaka, Keiji, to Canon Kabushiki Kaisha. Method and device for cleaning photosensitive screen in an image forming apparatus. 4,262,999, Cl. 355-15.000.

Sato, Takao; and Arita, Setsuo, to Hitachi, Ltd. Monitor system for operation of solenoid operated devices. 4,263,580, Cl. 340-163.000.

Sato, Toshiyuki: *See—*
Nomura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, 4,262,710, Cl. 141-98.000.

Saul, Franz J. Polygonally wrapped sleeve, and methods and devices for making same. 4,263,076, Cl. 156-194.000.

Saunders, Charles A., IV. Headlight glare shield for use with slotted fairing. 4,262,959, Cl. 296-78.100.

Saurino, Bruce C.: *See—*
Saurino, Vincent R.; and Saurino, Bruce C., 4,263,278, Cl. 424-75.000.

Saurino, Vincent R.; and Saurino, Bruce C. Mortuary composition. 4,263,278, Cl. 424-75.000.

Scarrott, Gordon G.; and Underwood, Michael J. Vehicle propulsion control systems. 4,262,783, Cl. 192-0.090.

Scata, Umberto; and Cecchin, Giuliano, to Montedison S.p.A. Catalysts and catalyst components useful for polymerizing olefins. 4,263,169, Cl. 252-429.00B.

Schacht, Louis L. Light dispersion system with substituted diffusion panels. 4,263,639, Cl. 362-147.000.

Schade, Otto H., Jr., to RCA Corporation. Bandgap reference. 4,263,519, Cl. 307-297.000.

Schaefer, David V.: *See—*
Anderson, Larry B.; Hamkins, Clark J.; Petrak, Harry A.; and Schaefer, David V., 4,262,785, Cl. 192-35.000.

Schaefer, Hans J. Intrusion detection system with a segmented radiation sensing mirror. 4,263,585, Cl. 340-567.000.

Schank, Richard L.; and Pochan, John M., to Xerox Corporation. Electrophotographic imaging device. 4,263,388, Cl. 430-59.000.

Scharpf, Otto H.: *See—*
Haft, Gerald; and Scharpf, Otto H., 4,262,548, Cl. 74-44.000.

Schaub, Bernard: *See—*
Bensahel, Daniel; Marine, Jean; and Schaub, Bernard, 4,263,056, Cl. 148-1.500.

Schaub, Heinz: *See—*
Popp, Karl; and Schaub, Heinz, 4,262,706, Cl. 139-103.000.

Scheffer, Kenneth F.: *See*—
Schuricht, Henry A.; and Scheffer, Kenneth F., 4,262,797, Cl. 198-756.000.
Scheibler, Erich: *See*—
Henckens, Arnold; and Scheibler, Erich, 4,263,267, Cl. 423-393.000.
Scheier, Donald J.; and Hathorn, Jack L., to Simon-Johnson Inc. Method and apparatus for eviscerating poultry. 4,262,387, Cl. 17-45.000.
Scheingold, William S.: *See*—
Cherian, Gabriel B.; Scheingold, William S.; and Kandybowski, Steven J., 4,262,986, Cl. 339-252.00R.
Schellhammer, Carl-Wolfgang: *See*—
Seng, Florin; Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, 4,263,435, Cl. 544-223.000.
Schenker, Erhard, to Sandoz Ltd. Hydrazino bicyclic pyridazines as hypertensives. 4,263,298, Cl. 424-250.000.
Scher, Herbert I.; and Ungar, Israel S., to Nevamar Corporation. Abrasion-resistant laminate. 4,263,081, Cl. 156-279.000.
Scherer, John J., to Safe Lite, Inc. Street sign assembly. 4,262,438, Cl. 40-607.000.
Schetine, Otto R.: *See*—
Sigott, Siegfried; Schetine, Otto R.; Zitz, Alfred J.; and Althaler, Wilhelm F., 4,263,005, Cl. 405-303.000.
Schiermeier, Walter W.: *See*—
Jaisle, Richard F.; and Schiermeier, Walter W., 4,263,073, Cl. 156-90.000.
Schifferly, Richard E. Automatic tire mounting and demounting machine. 4,262,727, Cl. 157-1.240.
Schiffers, Ansgar: *See*—
Hein, Klaus; and Schiffers, Ansgar, 4,262,610, Cl. 110-342.000.
Schinzel, Erich: *See*—
Pintschovius, Ulrich; Schinzel, Erich; and Rosch, Gunter, 4,263,441, Cl. 548-220.000.
Schips, Helmut. Label inserting device for sewing machines. 4,262,612, Cl. 112-114.000.
Schleiger, Robert L., to Goodyear Tire & Rubber Company, The. Building and curing an inextensible belt structure for a tire assembly. 4,263,083, Cl. 156-414.000.
Schmidt, Andreas: *See*—
Steiner, Eginhard; and Schmidt, Andreas, 4,263,157, Cl. 252-54.600.
Schmidt, Bradley J., to Baxter Travenol Laboratories, Inc. Fixed volume infusion device. 4,262,668, Cl. 128-214.00R.
Schmidt, George A., to Strick Corporation. Container lift pad. 4,262,961, Cl. 296-182.000.
Schmidt, Gunter; and Fink, Hans-Ferdi, to Th. Goldschmidt AG. Lubricant and release agent for molded rubber articles. 4,263,250, Cl. 264-338.000.
Schmidt, Thomas W., to Phillips Petroleum Company. Dual molecular beam system. 4,263,507, Cl. 250-281.000.
Schmidt, Wolfram; and Paust, Joachim, to BASF Aktiengesellschaft. Lithium ribonate, lithium arabonate and the preparation and purification of these salts. 4,263,454, Cl. 562-587.000.
Schminke, Heinz, to Metallgesellschaft Aktiengesellschaft. Multizone electrostatic precipitator. 4,263,023, Cl. 55-112.000.
Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,149, Cl. 252-8.900.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,208, Cl. 260-345.100.
Schmitz, Johannes H. A.: *See*—
Swinkels, Franciscus J. M.; Bannenberg, Rudolfus J. C.; and Schmitz, Johannes H. A., 4,263,164, Cl. 252-301.40R.
Schmolka, Irving R., to BASF Wyandotte Corporation. Heavy-duty liquid detergent compositions containing alkoxylated alkylene diamines. 4,263,179, Cl. 252-548.000.
Schnabel, Wilhelm J.; and Early, Robert M., to Olin Corporation. Process for the preparation of aromatic carbodiimides. 4,263,221, Cl. 260-453.0AM.
Schneider, Horst W.: *See*—
Varnas, Joseph; and Schneider, Horst W., 4,263,027, Cl. 55-346.000.
Schneider, Raymond C., to Twin Disc, Incorporated. Hydraulic retarder for multi-speed power transmissions. 4,262,781, Cl. 192-4.00B.
Schneier, Michael L.; and Peters, Henry B., to Sybron Corporation. Double acting hinged pressure vessel closure. 4,262,447, Cl. 49-254.000.
Schnitzius, Klaus: *See*—
Freitag, Herbert; and Schnitzius, Klaus, 4,263,488, Cl. 200-52.00R.
Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,263,214, Cl. 260-397.200.
Schoberl, Meinolf H. A.: *See*—
Reis, August K.; Kirmaier, Norbert L.; and Schoberl, Meinolf H. A., 4,263,118, Cl. 204-242.000.
Schoenfield, Palmer J.: *See*—
Ferris, Michael J.; Schoenfield, Palmer J.; and Meyer, Burton C., 4,262,443, Cl. 46-103.000.
Schoennagel, Hans J., to Mobil Oil Corporation. Reforming catalyst of separate platinum-containing and iridium-containing particles. 4,263,134, Cl. 208-139.000.
Schoettle, Karl R., Jr. Slide chart manufacture. 4,262,939, Cl. 283-65.000.
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Hirschberg, Rudolf; and Schonfeld, Bernd, 4,263,016, Cl. 51-309.000.
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Schulz, Johann G. D.; and Onopchenko, Anatoli, to Gulf Research & Development Company. Process for converting cyclohexane to adipic acid. 4,263,453, Cl. 562-543.000.
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Schumacher, Frederick G.; and Yllo, Walter, to Du Pont de Nemours, E. I., and Company. Highly filled thermoplastic compositions prepared with fine particle size filler. 4,263,196, Cl. 260-33.6UA.
Schuricht, Henry A.; and Scheffer, Kenneth F., to AMSTED Industries Incorporated. Reciprocating storage unit. 4,262,797, Cl. 198-756.000.
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Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,263,119, Cl. 204-257.000.
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Schweitzer, Edmund O., Jr. Test point mounted circuit condition indicator. 4,263,550, Cl. 324-133.000.
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Prudhon, Francois; Scicluna, Augustin; and Verdier, Jean-Michel, 4,263,234, Cl. 261-153.000.
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Turpin, Edward T., 4,263,194, Cl. 260-29.6RW.
Scott & Fetzer Company, The: *See*—
Bowers, William D., 4,262,384, Cl. 15-328.000.
Scott, James E.: *See*—
Bentley, Wm. F.; Luedtke, Arthur; and Scott, James E., 4,263,597, Cl. 343-121.000.
Seigh, William. Plate hanger. 4,262,874, Cl. 248-467.000.
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Michel, Max; Vrisakis, Georges; Seigneurin, Laurent; and Bouge, Gilbert, 4,263,266, Cl. 423-329.000.
Seiler, Hartmut, to Robert Bosch GmbH. High input impedance transistor amplifier. 4,263,562, Cl. 330-257.000.
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Sekiya, George W., to Mark Controls Corporation. Control valve. 4,262,844, Cl. 236-48.00R.
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Busch, Wolfram; Brandrup, Johannes; Sommer, Werner; and Semmler, Horst, 4,263,200, Cl. 260-42.490.
Semperit Aktiengesellschaft: *See*—
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Seng, Florin; Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. 6-[2-Hydroxy-4-(1,2,3-triazol-2-yl)-phenyl]-2,4-dioxo-1,3,5-trimethyl-hexahydro-s-triazines and their preparation. 4,263,435, Cl. 544-223.000.
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Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.

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Waegaert, Pierre; and Battard, Jean-Claude, 4,262,681, Cl. 131-105.000.

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Shandon Southern Products Limited: *See*—
Knox, John H.; and Gilbert, Mary T., 4,263,268, Cl. 423-449.000.

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Shapiro, Wilbur: *See*—
Heshmat, Hooshang; and Shapiro, Wilbur, 4,262,975, Cl. 308-9.000.

Sharp Kabushiki Kaisha: *See*—
Kubo, Kimio; and Miyamae, Ryuichi, 4,262,675, Cl. 128-680.000.
Matsumoto, Masafumi; and Kotani, Matahira, 4,263,602, Cl. 346-140.00R.

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Groenendaal, Willem; and Harvey, Colin G., 4,263,270, Cl. 423-573.00R.
Haynes, George R., 4,263,301, Cl. 424-253.000.

Sheng, Ming N.; and Arnold, Mary T., to Atlantic Richfield Company. Synthetic lubricant. 4,263,465, Cl. 585-18.000.

Shenk, Jay D., to Armstrong Cork Company. Method for retaining textured surface of pressed ceiling board. 4,263,093, Cl. 162-109.000.

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Graham, William H.; and Shepard, Inella G., 4,263,444, Cl. 560-26.000.

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Egan, Richard R.; and Watts, Michelle M., 4,263,177, Cl. 252-547.000.

Sherk, Fred T.: *See*—
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Sherman, James B., to Universal Data Systems, Inc. Microprocessor data modem. 4,263,670, Cl. 375-9.000.

Sherry, Charles E.: *See*—
Price, Donald R., 4,263,074, Cl. 156-110.00R.

Sherry, Charles Edward: *See*—
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Chen, Nai Y.; and Shihabi, David S., 4,263,129, Cl. 208-111.000.

Shindell, Herman A. Methods for the treatment of water. 4,263,114, Cl. 204-149.000.

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Murashita, Masaki; Nakano, Seizo; Itoh, Hiroshi; Shiono, Shigeo; and Takahashi, Takeshi, 4,263,491, Cl. 200-146.00R.

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Sakimoto, Seiichiro; and Yoshioka, Yoshiaki, 4,263,193, Cl. 260-29.6RB.

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Danko, Oliver L.; Steiss, William C.; Amor, William H., Jr.; Tobbe, William P.; Gardner, Thomas J.; and Shufflebarger, Earl D., 4,262,880, Cl. 251-288.000.
Wujnovich, Ronald J.; Shufflebarger, Earl D.; and Steiss, William C., 4,263,140, Cl. 210-247.000.

Shuler, James R., to Caterpillar Tractor Co. Track chain assembly with integral pin and link. 4,262,971, Cl. 305-14.000.

Sibeud, Jean-Paul. Device with a jack for controlling a gear box synchromesh, and method for using same. 4,262,784, Cl. 192-52.000.

Siefert, William J.: *See*—
Roeder, Charles L.; Siefert, William J.; and Theijsmeijer, Frederik, 4,262,627, Cl. 118-318.000.

Siekanowicz, Wieslaw W.; and Fields, John R., to RCA Corporation. Modulator with variable launch conditions for multi-electron gun display devices. 4,263,529, Cl. 313-422.000.

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Ahr, Dieter, 4,262,599, Cl. 104-88.000.
Diederichs, Arthur, 4,263,524, Cl. 310-112.000.
Haass, Adolf, 4,263,668, Cl. 370-24.000.
Kemmesies, Hartmut, 4,263,591, Cl. 340-695.000.
Moelimer, Frank, 4,263,569, Cl. 333-151.000.
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Sigma Systems, Inc.: *See*—
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,262,470, Cl. 53-202.000.
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,262,474, Cl. 53-551.000.

Sigott, Siegfried; Schetine, Otto R.; Zitz, Alfred J.; and Althaler, Wilhelm F., to Vereinigte Osterreichische Eisen-und Stahlwerke - Alphine Montan Aktiengesellschaft. Device for provisionally consolidating a gallery and suitable consolidating frame. 4,263,005, Cl. 405-303.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-4-oxo-PGI$_1$ compounds. 4,263,210, Cl. 260-346.220.

Simcoe, Lee A.; and Miller, Mathew C., to American Fence Co., Inc. Fence structure having improved corner construction. 4,262,882, Cl. 256-22.000.

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Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., 4,263,664, Cl. 365-185.000.

Simmons, David H.; and Panelo, Alfredo A., to Litton Systems, Inc. DC to DC converter. 4,263,642, Cl. 363-17.000.

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Sinclair, William R.; and van Roosbroeck, Willy W., to Bell Telephone Laboratories, Incorporated. Method of making optical fibers utilizing thermophoretic deposition of glass precursor particulates. 4,263,032, Cl. 65-3.00A.

Sinfelt, John H.: *See*—
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Singer, Arnold J.: *See*—
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Singer Company, The: *See*—
Goldstein, Murray S., 4,262,861, Cl. 244-3.200.
Longerich, Ernest P., 4,262,595, Cl. 102-10.000.
Nalley, David J., 4,262,420, Cl. 30-392.000.

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Buckley, Alan J.; Singer, Michael; and Wild, James H., 4,263,424, Cl. 528-85.000.

Single Buoy Moorings, Inc.: *See*—
Foolen, Johannes A., 4,262,380, Cl. 9-8.00P.

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Stockman, Robert M.; and Sipovic, Joseph J., 4,263,638, Cl. 361-328.000.

Sisko, Paul; and Lehman, Robert. Ski holder. 4,262,890, Cl. 269-21.000.

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Sittig, Wolfgang: *See*—
Ebner, Heinrich; Faust, Uwe; and Sittig, Wolfgang, 4,263,143, Cl. 210-629.000.

Sjoberg, Nils G., to Bulten-Kanthal AB. Holding device for electrical resistance elements in furnaces. 4,263,470, Cl. 13-25.000.

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SKF Kugellagerfabriken GmbH: *See*—
Kispert, Klaus; and Meining, Hans, 4,262,979, Cl. 308-217.000.

Skinner, David R.; Bethel, Lawrence L.; and Clemens, Ralph S., to General Electric Company. Internal support structure for heat exchanger. 4,262,705, Cl. 138-149.000.

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Phillips, Benjamin; Skraba, Walter J.; and McNeil, Daniel W., 4,263,447, Cl. 560-231.000.

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Slo-Pitcher, Inc.: *See*—
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Slongo, Mario; and Nikles, Erwin, to Ciba-Geigy Corporation. Polyalkylpiperidine-spirooxazolones and their use as light stabilizers. 4,263,505, Cl. 260-45.8NZ.

Slovenska vedecko-technicka spolocnost, Dom techniky: *See*—
Lenorak, Ferdinand, 4,262,479, Cl. 57-58.540.

Slusarczyk, Charles J. Powered hang glider with reduction drive. 4,262,863, Cl. 244-13.000.

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Ooms, Hans; and Smidt, Joseph J. M., 4,262,469, Cl. 53-76.000.

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Chenoweth, Roger D.; and Smith, Donald J., 4,263,634, Cl. 360-133.000.
Smith, George A., Sr., to Fluid Coal Corporation. Coal cleaning. 4,263,013, Cl. 44-1.00B.
Smith, Harry: *See—*
Buckle, Derek R.; and Smith, Harry, 4,263,299, Cl. 424-250.000.
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Smith International, Inc.: *See—*
Allison, Glenn L.; Winship, Thomas E.; and Justman, Daniel B., 4,262,760, Cl. 175-347.000.
Smith, Jay, III; Hedgcoth, Virgile L.; and Grimm, Thomas H., to Park Management and Development Co. Inkless fingerprinting device and method adapted for recordation of a plurality of fingerprints. 4,262,623, Cl. 118-31.500.
Smith, Steven D.: *See—*
Hurtig, Roy E.; Larson, Bert R.; and Smith, Steven D., 4,262,860, Cl. 242-192.000.
Smith, Thomas E.: *See—*
Nyman, Frederick R.; and Smith, Thomas E., 4,262,875, Cl. 249-114.00R.
SmithKline Corporation: *See—*
Bender, Paul E., 4,263,311, Cl. 424-270.000.
Smiths Industries Limited: *See—*
Hewitt, Martin; and Sinclair, David, 4,262,531, Cl. 73-304.00C.
Smrt, Thomas J. Marking apparatus. 4,262,821, Cl. 222-162.000.
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Marconi, Walter; Bartoli, Francesco; Gulinelli, Silvio; Morisi, Franco; and Zaccardelli, Delio, 4,263,180, Cl. 260-8.000.
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Sneider, Vincent R. Accordion-style syringes, douches and attachments therefor. 4,262,669, Cl. 128-232.000.
Societa di Elettronica per l'Automazione Sepa S.p.A.: *See—*
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Le Salver, Robert; and Poupard, Dominique, 4,262,886, Cl. 267-8.00R.
Societe Anonyme dite: Ceraver: *See—*
Willem, Michel, 4,263,478, Cl. 174-169.000.
Societe Anonyme dite: Laboratoire Debat: *See—*
Debat, Jacques; Lemoine, Jean; and Longuet, Monique, 4,263,285, Cl. 424-195.000.
S.A. Etablissements Francois Salomon & Fils: *See—*
Riedel, Tilo, 4,262,926, Cl. 280-605.000.
Societe Chimique des Charbonnages - CdF Chimie: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe d'Etudes de Machines Thermiques S.E.M.T.: *See—*
Coulin, Jean P., 4,262,638, Cl. 123-41.410.
Societe d'Etudes Scientifiques et Industrielles de l'Ile de France: *See—*
Thominet, Michel; and Perrot, Jacques, 4,263,316, Cl. 424-274.000.
Societe Europeenne des Produits Refractaires: *See—*
Parigot, Georges; and Passerat, Jean-Louis, 4,262,453, Cl. 51-93.000.
Societe Nationale Industrielle Aerospatiale: *See—*
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Soeda, Kozi; Hoshikawa, Katuyuki; and Kimura, Akitaka, to Sumitomo Rubber Industries, Ltd. Method of forming puncture preventing layer for tire and apparatus employed therefor. 4,262,624, Cl. 118-44.000.
Soeda, Yuji; and Goto, Akio, to Tokico Ltd. Gas filling method. 4,262,472, Cl. 53-403.000.
Soejima, Yoshikazu: *See—*
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Sohn, Mireille, to Regie Nationale des Usines Renault. Window-wiping device for double headlights on motor vehicles. 4,262,383, Cl. 15-250.140.
Sokol, Filip L. Nestable unitized shelving system. 4,262,605, Cl. 108-91.000.
Solartron Electronic Group Limited, The: *See—*
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Solvay & Cie.: *See—*
Godfroid, Marcel; and Gerkens, Roger, 4,263,464, Cl. 570-109.000.
Somei, Kunio: *See—*
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Sommer, Werner: *See—*
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Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,263,675, Cl. 455-192.000.
Morii, Kokichi; Shichijo, Hajime; and Haneishi, Kohei, 4,263,674, Cl. 455-175.000.
Tominaga, Kiyonori, 4,263,614, Cl. 358-69.000.
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Southgate, Robert: *See—*
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Spatz, David M.; and Widner, Paul J., to Dow Chemical Company, The. Psychoactive 3-(1-2-diarylethyl)-1,4,5,6-tetrahydro-1,2,4-triazines and their method of use. 4,263,295, Cl. 424-249.000.
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Spencer, Andrew R., to Facet Enterprises, Inc. Porous acoustic element and a method of controlling aerodynamic noise in a flowing gas. 4,262,770, Cl. 181-258.000.
Sperry Corporation: *See—*
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Jillie, Don W., Jr., 4,263,603, Cl. 357-5.000.
Lynch, Michael F.; and Levine, Seymour, 4,262,427, Cl. 33-361.000.
Sperry, Peter R.: *See—*
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Sperry Rand Corporation: *See—*
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Spiegelstein, Wolfgang: *See—*
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Spirig, Ernst. Regenerative feedback intruder alarm apparatus. 4,263,584, Cl. 340-566.000.
Spisak, Edward G. Wheel trim retainer. 4,262,967, Cl. 301-37.00R.
Sprague Electric Company: *See—*
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Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2-Oxabicyclooctane derivatives for augmenting or enhancing the flavor of foodstuffs. 4,263,149, Cl. 252-8.900.
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Springer, Helmut: *See—*
Weber, Jurgen; and Springer, Helmut, 4,263,460, Cl. 568-457.000.
Springer, William E.; and Walter, Henry J., to Clairol Incorporated. Infrared heating hair dryer. 4,263,500, Cl. 219-377.000.
Square D Company: *See—*
Draper, Charles W.; and Legatti, Raymond H., 4,263,637, Cl. 361-45.000.
Squires, Stanley C.: *See—*
Petersen, Larry D.; and Squires, Stanley C., 4,262,407, Cl. 29-460.000.
Staats, Richard A.: *See—*
DeMasi, Gordon A.; and Staats, Richard A., 4,262,827, Cl. 222-607.000.
Stabilus GmbH: *See—*
Freitag, Herbert; and Schnitzius, Klaus, 4,263,488, Cl. 200-52.00R.
Stadler, Peter: *See—*
Mohring, Edgar; Stadler, Peter; and Roessler, Peter, 4,263,296, Cl. 424-249.000.
Stafford, John P.; Slater, Richard A.; Kobs, Frederick E.; and Ryan, Joseph L., to Honeywell Information Systems Inc. Split system bus cycle for direct memory access of peripherals in a cathode ray tube display system. 4,263,648, Cl. 364-200.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, to Boehringer Ingelheim GmbH. Substituted 2-phenylamino-1,3-tetrahydro-2-pyrimidines and salts thereof. 4,263,300, Cl. 424-251.000.
Staiger, Dieter E., to International Business Machines Corporation. Pattern generation system. 4,263,669, Cl. 371-27.000.
Stalherm, Dieter; and Bocsanczy, Janos, to Carl Still GmbH & Co. KG., Firma. Method and apparatus for reducing fine dust emission while charging predried and preheated coal into coke ovens. 4,263,100, Cl. 201-41.000.
Stancati, Nicholas T.: *See—*
Logan, Maurus C.; Garner, Peter; and Stancati, Nicholas T., 4,262,417, Cl. 30-140.000.
Standard Oil Company: *See—*
Pesa, Frederick A.; and Graham, Anne M., 4,263,175, Cl. 252-473.000.
Standard Oil Company (Indiana): *See—*
Berger, Joseph C.; Fitzpatrick, James E.; and Whelan, James P., 4,263,247, Cl. 264-273.000.
Hammett, Robert E., 4,262,746, Cl. 166-279.000.

Stanley, Louis, to Galexie Manufacturing Pty. Limited. Coin dispensing apparatus including guide tube and cams for retaining coins in the guide tube. 4,262,818, Cl. 221-296.000.

Stanley Tools Limited: *See—*
King, Stanley; Henschel, Giles; and Lawson, Andrew, 4,262,571, Cl. 83-454.000.

Stansbury, Eric W.: *See—*
Jubb, Albert; and Stansbury, Eric W., 4,262,484, Cl. 60-641.000.

Stansfeld, James W., to Solartron Electronic Group Limited, The. Measurement of fluid density. 4,262,523, Cl. 73-30.000.

Stark, Theodore S., to M & M Luggage Co., Inc. Luggage closure. 4,262,718, Cl. 150-42.000.

Statics, Inc.: *See—*
Testone, Anthony Q., 4,263,636, Cl. 361-230.000.

Stauffer Chemical Company: *See—*
Anzenberger, Joseph F., 4,263,062, Cl. 148-6.15R.
Berens, George; and Honig, Milton L., 4,263,159, Cl. 252-79.000.
Dennis, Stephan, 4,263,287, Cl. 424-200.000.
Thiele, Gerald H., 4,263,038, Cl. 71-92.000.
Uhing, Eugene H., 4,263,230, Cl. 260-932.000.

Steelcase Inc.: *See—*
Kolk, Stephen B.; and Hozeski, Kenneth W., 4,262,871, Cl. 248-188.700.

Steffen, Ulrich; Alberts, Heinrich; and Prinz, Richard, to Bayer Aktiengesellschaft. Graft copolymers containing allyl compounds. 4,263,418, Cl. 525-277.000.

Steiner, Eginhard; and Schmidt, Andreas, to Ciba-Geigy Corporation. Chlorinated derivatives of butyric acid as useful lubricant additives and lubricants containing same. 4,263,157, Cl. 252-54.600.

Steinmetz, Richard J.; and Beaumont, Gregory J., to Zenith Radio Corporation. Horizontal drive circuit for video display. 4,263,615, Cl. 358-148.000.

Steinmetzer, Walter, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for separating leucine, isoleucine and valine. 4,263,450, Cl. 562-554.000.

Steiss, William C.: *See—*
Danko, Oliver L.; Steiss, William C.; Amor, William H., Jr.; Tobbe, William P.; Gardner, Thomas J.; and Shufflebarger, Earl D., 4,262,880, Cl. 251-288.000.
Wujnovich, Ronald J.; Shufflebarger, Earl D.; and Steiss, William C., 4,263,140, Cl. 210-247.000.

Stemme, Otto; Lermann, Peter; Stenzenberger, Volkmar; Went, Werner; Herzig, Eberhard; and Hoesch, Friedrich-Ludolph, to AGFA-Gevaert AG. Method of, and apparatus for photographically making positive pictures. 4,263,000, Cl. 355-27.000.

Stenzenberger, Volkmar: *See—*
Stemme, Otto; Lermann, Peter; Stenzenberger, Volkmar; Went, Werner; Herzig, Eberhard; and Hoesch, Friedrich-Ludolph, 4,263,000, Cl. 355-27.000.

Sterck, Lothar: *See—*
Keunecke, Gerhard; Klopfer, Anton; Krimphove, Herbert; and Sterck, Lothar, 4,263,211, Cl. 260-346.760.

Sterling Drug Inc.: *See—*
Margulies, Herman, 4,262,816, Cl. 221-46.000.

Stern, Donald J., to Allsop Automatic, Inc. Apparatus for heating ski boots. 4,263,502, Cl. 219-521.000.

Sternisa, Danilo: *See—*
Hodes, Erich; and Sternisa, Danilo, 4,263,361, Cl. 428-240.000.

Stevenson, Alastair K.: *See—*
Walker, David M.; and Stevenson, Alastair K., 4,262,644, Cl. 123-418.000.

Stewart, Jack F.: *See—*
Downs, William; Pirsh, Edward A.; Stewart, Jack F.; and Strom, Stephen S., 4,263,021, Cl. 55-73.000.

Stewart, Norman E., to Exxon Production Research Company. Steam stimulation process for recovering heavy oil. 4,262,745, Cl. 166-263.000.

Stitzer, Phillip L.; and Deutsch, Stephen A., to Witco Chemical Corporation. Urethane foam gun. 4,262,847, Cl. 239-112.000.

Stockman, Robert M.; and Sipovic, Joseph J., to American Radionic Co., Inc. Dial wound capacitor and method of making same. 4,263,638, Cl. 361-328.000.

Stoelting, Inc.: *See—*
White, Donald W., 4,262,392, Cl. 24-36.000.

Stokes, Kenneth B., to Medtronic, Inc. Pacing lead with tine protector. 4,262,678, Cl. 128-786.000.

Stone, James H.; and Stone, Stephen H., to Dunlop Limited. Dartboard. 4,262,910, Cl. 273-408.000.

Stone, Stephen H.: *See—*
Stone, James H.; and Stone, Stephen H., 4,262,910, Cl. 273-408.000.

Storni, Angelo: *See—*
Blattner, Hans; and Storni, Angelo, 4,263,315, Cl. 424-274.000.

Straka, Daniel C., to PPG Industries, Inc. Coating composition for glass fibers and coated glass fibers made from same. 4,263,362, Cl. 428-258.000.

Strasser, Bernd: *See—*
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,263,119, Cl. 264-257.000.

Strasser, Robert A.; and Case, Richard B., to Ford Motor Company. Air bag restraint system. 4,262,931, Cl. 280-729.000.

Straub, Edward L.: *See—*
Merkley, Michael J.; Jacobs, Stephen E.; and Straub, Edward L., 4,262,750, Cl. 171-27.000.

Strausburg, Larry D., to Monarch Marking Systems, Inc. Hand-held labeler. 4,263,086, Cl. 156-542.000.

Streeter, Robert R.; Whitehorn, Vincent J.; and Nicholas, Earl C., to L. D. Schreiber Cheese Co., Inc. Method for draining whey for making large sized blocks of cheese. 4,263,330, Cl. 426-414.000.

Streich, Steven G., to Halliburton Company. Conductor pipe plug. 4,262,702, Cl. 138-89.000.

Strick Corporation: *See—*
Schmidt, George A., 4,262,961, Cl. 296-182.000.

Strom, Stephen S.: *See—*
Downs, William; Pirsh, Edward A.; Stewart, Jack F.; and Strom, Stephen S., 4,263,021, Cl. 55-73.000.

Studer, Martin; and Wicki, Heinz. Metal complex dyes of trisazo compounds having a 3,5-dinitro-2-hydroxyphenylazo group and two other arylazo groups bound to a 1-amino-3-hydroxy-1,3-diamino- or 1,3-dihydroxy-benzene nucleus. 4,263,229, Cl. 260-145.00C.

Stukas, Leo A.: *See—*
Rentmeester, Kenneth R.; Eike, Eugene F.; Echternach, Gerald G.; and Stukas, Leo A., 4,263,338, Cl. 427-55.000.

Subramanian, Pallatheri M. Process for making laminar articles of polyolefin and a second polymer. 4,263,238, Cl. 264-515.000.

Sudo, Fumio: *See—*
Haida, Osamu; Emi, Toshihiko; Yamada, Sumio; Sudo, Fumio; and Sonoda, Hiraku, 4,263,043, Cl. 75-58.000.

Sugalski, Raymond K., to General Electric Company. Method for manufacturing a hermetically sealed electrochemical storage cell. 4,262,414, Cl. 29-623.200.

Suganuma, Hisashi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,263,581, Cl. 340-168.00B.

Suganuma, Toshio: *See—*
Matsubara, Akira; Sakai, Hideaki; Nakano, Takuo; and Suganuma, Toshio, 4,263,302, Cl. 424-258.000.

Sugaya, Takao; Yamashita, Chikao; and Yoshida, Noriyuki, to Brother Kogyo Kabushiki Kaisha. Pattern stitch sewing machine having means for determining time of operator influence to effect varied machine control. 4,262,614, Cl. 112-158.00E.

Sugimoto, Seiji; Ueda, Yoshio; and Somei, Kunio, to Dainippon Ink and Chemicals Incorporated. Carton blank folding and gluing system. 4,262,582, Cl. 493-25.000.

Sugino, Tadaaki: *See—*
Takahashi, Hiromichi; and Sugino, Tadaaki, 4,263,592, Cl. 340-707.000.

Sulzer Brothers Limited: *See—*
Augsburger, Walter, 4,262,636, Cl. 122-406.0ST.
Frei, Arno, 4,262,515, Cl. 72-302.000.
Popp, Karl; and Schaub, Heinz, 4,262,706, Cl. 139-103.000.

Sumitomo Aluminium Smelting Company, Limited: *See—*
Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, 4,263,261, Cl. 423-121.000.

Sumitomo Chemical Company, Limited: *See—*
Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,263,219, Cl. 260-453.0RW.
Ishizumi, Kikuo; and Katsube, Junki, 4,263,304, Cl. 424-262.000.
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,263,463, Cl. 568-873.000.
Noguchi, Hiroshi; Hashimoto, Shunichi; Kitamura, Shigeyoshi; Matsuo, Takashi; Mine, Akihiko; and Kamoshita, Katsuzo, 4,263,039, Cl. 71-95.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Soeda, Kozi; Hoshikawa, Katuyuki; and Kimura, Akitaka, 4,262,624, Cl. 118-44.000.

Sundaram, T. R.: *See—*
Johnson, Virgil E., Jr.; Sundaram, T. R.; and Conn, Andrew F., 4,262,757, Cl. 175-67.000.

Sundeen, Joseph E.; and Dejneka, Tamara, to E. R. Squibb & Sons, Inc. Heterocyclic containing amides as inhibitors of mammalian collagenase. 4,263,293, Cl. 424-248.500.

Sung, Rodney L.; Bialy, Jerzy J.; Dorn, Peter; Cullen, William P.; and Nebzydoski, John W., to Texaco Inc. Rust inhibitor and oil composition containing same. 4,263,015, Cl. 44-63.000.

Superior Electric Company, The: *See—*
Johnson, Philmore E., 4,263,547, Cl. 324-72.500.

Supp, Emil: *See—*
Moller, Friedrich; Marschner, Friedemann; Supp, Emil; Boll, Walter; and Cornelius, Gerhard, 4,263,141, Cl. 260-450.000.

Surjaatmadja, Jim B., to Halliburton Company. Diffuser for wellhead isolation tool. 4,262,743, Cl. 166-91.000.

Sutrina, Thomas A.; and Behr, R. Douglas, to Dow Chemical Company, The. Method of forming an integral closure for a thermoplastic container. 4,263,079, Cl. 156-244.110.

Suzaki, Yasuzi: *See—*
Fujita, Hiroyuki; Suzaki, Yasuzi; and Tachibana, Atsushi, 4,263,495, Cl. 219-121.0LD.

Suzuki, Hajime, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method for injecting transport fluid into a shed from auxiliary jet nozzles. 4,262,707, Cl. 139-435.000.

Suzuki, Masaharu: *See—*
Hisatsune, Yoshinobu; and Suzuki, Masaharu, 4,263,484, Cl. 179-111.00E.

Suzuki, Yasuhiro: *See—*
Omori, Keizo; and Suzuki, Yasuhiro, 4,262,843, Cl. 236-15.00C.

Svensson, Johan A. Device for simplifying the setting and taking in of sails. 4,262,617, Cl. 114-104.000.

Sverdlin, Anatoly. Device for reducing fuel consumption in internal combustion engines. 4,262,642, Cl. 123-378.000.
Sweeny, Norman P.: *See*—
Fraser, William J.; and Sweeny, Norman P., 4,262,937, Cl. 282-27.500.
Swinkels, Franciscus J. M.; Bannenberg, Rudolfus J. C.; and Schmitz, Johannes H. A., to U.S. Philips Corporation. Method of preparing a luminescent aluminate. 4,263,164, Cl. 252-301.40R.
Swinkels, Godefridus M.; Hirsch, Horst E.; Fairweather, Michael J.; and Parker, Ernest G., to Cominco Ltd. Precipitation of chloride from zinc sulphate solution. 4,263,109, Cl. 204-119.000.
Swisher, James A. Meter lock seal. 4,262,946, Cl. 292-307.00R.
Sybron Corporation: *See*—
Schneier, Michael L.; and Peters, Henry B., 4,262,447, Cl. 49-254.000.
Symens, Raymond D.; and Rickard, Robert S., to Earth Sciences, Inc. Process for removing humic matter from phosphoric acid solutions. 4,263,148, Cl. 210-705.000.
Syntex Inc.: *See*—
Edwards, John A., 4,263,289, Cl. 424-238.000.
Synthes AG: *See*—
Perrett, Thomas R., 4,262,799, Cl. 206-363.000.
Taboga, Leandro. Means and methods of reclaiming and processing biodegradable waste into poultry products and humus-like substances. 4,262,633, Cl. 119-1.000.
Tachibana, Atsushi: *See*—
Fujita, Hiroyuki; Suzaki, Yasuzi; and Tachibana, Atsushi, 4,263,495, Cl. 219-121.0LD.
Tadanier, John S.; and Martin, Jerry R., to Abbott Laboratories. 1,2,6-Tri-N-benzyloxycarbonylfortimicin B-4,5-carbamate and 1,2,6-tri-N-acetylfortimicin B-4,5-carbamate. 4,263,429, Cl. 536-17.00R.
Tadokoro, Yukio; and Matsumoto, Kenji, to Bridgestone Tire Co., Ltd. Pneumatic aircraft tire with radially varying tread contour. 4,262,721, Cl. 152-209.00R.
Taguchi, Masahiro; and Inagaki, Mitsuo, to Nippon Soken, Inc. AC Generator with low noise claw tooth rotor. 4,263,526, Cl. 310-263.000.
Tai, Masaru: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.
Takachiho Chemical Industrial Co., Ltd.: *See*—
Egami, Masashi, 4,262,713, Cl. 141-9.000.
Takada, Juichiro. Inertia-responsive actuating device for vehicle seat belt retractors. 4,262,858, Cl. 242-107.40A.
Takada, Juichiro. Input motion coupling to a motion amplifier for use in passive seat belt restraint systems. 4,262,934, Cl. 280-804.000.
Takagi, Mikio: *See*—
Tanabe, Kaoru; Nomura, Yoshifumi; Maeda, Mamoru; and Takagi, Mikio, 4,263,087, Cl. 156-613.000.
Takahashi, Hiromichi; and Sugino, Tadaaki, to Pentel Kabushiki Kaisha. Input pen assembly. 4,263,592, Cl. 340-707.000.
Takahashi, Hiroshi: *See*—
Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Kawabata, Kazunori, 4,262,639, Cl. 123-52.00M.
Takahashi, Katsuhiko; Doi, Hachiro; and Yaegashi, Masayuki, to Fuso Keigokin Co., Ltd. Method and apparatus for collecting grass clippings. 4,262,475, Cl. 56-16.600.
Takahashi, Kouichi; Ishida, Hidekuni; and Yonezawa, Toshio, to Tokyo Shibaura Electric Co., Ltd. Fabrication of transistors having specifically paired dopants. 4,263,067, Cl. 148-190.000.
Takahashi, Kunimasa: *See*—
Takeda, Makoto; Taniyama, Eiji; Ozawa, Yuji; Imanari, Makoto; Takahashi, Kunimasa; and Iwane, Hiroshi, 4,263,457, Cl. 568-316.000.
Takahashi, Takeshi: *See*—
Murashita, Masaki; Nakano, Seizo; Itoh, Hiroshi; Shiono, Shigeo; and Takahashi, Takeshi, 4,263,491, Cl. 200-146.00R.
Takahashi, Tohru: *See*—
Ho, Charles W.; and Takahashi, Tohru, 4,263,481, Cl. 179-6.140.
Takahashi, Toru, to Yamaichi Electric Mfg. Co., Ltd. Electric contact terminal member. 4,262,984, Cl. 339-97.00R.
Takakura, Isamu: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.
Takala, Seppo I., to Impala Plastics (Pty) Limited. Thermoplastic welding. 4,263,084, Cl. 156-503.000.
Takanashi, Hiroyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Operating mechanisms of tape recorders. 4,263,631, Cl. 360-105.000.
Takano, Shuntaro: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.
Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, 4,263,291, Cl. 424-246.000.
Takatori, Yasushi: *See*—
Nishimura, Yukuo; Haruta, Masahiro; Takatori, Yasushi; and Nishide, Katsuhiko, 4,263,601, Cl. 346-1.100.
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tozuka, Zenzaburo, to Fujisawa Pharmaceutical Co., Ltd. 3,7-Disubstituted-3-cephem-4-carboxylic acid compounds and processes for the preparation thereof. 4,263,291, Cl. 424-246.000.
Takayama, Shuichi: *See*—
Jikihara, Kazuo; Itoh, Shigekazu; Takayama, Shuichi; Sato, Koichi; Kimura, Ichiro; and Chiyomaru, Isao, 4,263,040, Cl. 71-100.000.
Takeda Chemical Industries, Ltd.: *See*—
Miyashita, Osamu; and Akimoto, Hiroshi, 4,263,294, Cl. 424-248.540.
Takeda, Hisami: *See*—
Kitamura, Shigeyoshi; Itaya, Norbushige; Okuno, Yoshitoshi; Ohno, Nobuo; Matsuo, Takashi; Hirano, Masachika; Mizutani, Toshio; and Takeda, Hisami, 4,263,463, Cl. 568-873.000.
Takeda, Makoto; Taniyama, Eiji; Ozawa, Yuji; Imanari, Makoto; Takahashi, Kunimasa; and Iwane, Hiroshi, to Mitsubishi Petrochemical Company, Ltd. Process for producing biphenyl derivatives. 4,263,457, Cl. 568-316.000.
Takefuta, Hideyasu; and Yamaguchi, Toshio, to Diesel Kiki Co., Ltd. Electro-magnetic spring-wound clutch. 4,262,787, Cl. 192-84.00T.
Takemoto, Ichiki: *See*—
Fujita, Fumio; Kishida, Hiroshi; Itaya, Nobushige; and Takemoto, Ichiki, 4,263,219, Cl. 260-453.0RW.
Taki, Hideo: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.
Taki, Takamitsu: *See*—
Kuroda, Michio; Nakamura, Shozo; Oshima, Ryoichiro; and Taki, Takamitsu, 4,262,485, Cl. 60-669.000.
Takigawa, Hiroyoshi; Miyamura, Nobuhiro; Ogawa, Hiroshi; and Ohkuni, Shinichiro, to Bridgestone Tire Co., Ltd. Radial tire for heavy load vehicles. 4,262,722, Cl. 152-209.00R.
Takizawa, Katsuhiko: *See*—
Satake, Shozo; and Takizawa, Katsuhiko, 4,263,545, Cl. 324-57.0PS.
Tamai, Mitsuru; and Yasuhara, Takeshi, to Fuji Electric Co., Ltd. Pressure measuring device. 4,262,540, Cl. 73-718.000.
Tamai, Yasumasa: *See*—
Kamohara, Hideaki; Yoshitomi, Yuji; Koyama, Takaichi; and Tamai, Yasumasa, 4,262,517, Cl. 72-370.000.
Tan, Marshall, to Celanese Corporation. Process for producing high-strength, ultralow denier polybenzimidazole (PBI) filaments. 4,263,245, Cl. 264-184.000.
Tanabe, Kaoru; Nomura, Yoshifumi; Maeda, Mamoru; and Takagi, Mikio, to Fujitsu Limited. Process for producing epitaxial layers. 4,263,087, Cl. 156-613.000.
Tanaka, Keiji: *See*—
Sato, Tadashi; and Tanaka, Keiji, 4,262,999, Cl. 355-15.000.
Tanaka, Toshio: *See*—
Torii, Shinro; Tanaka, Toshio; Sasaki, Kouichi; Kato, Tsuneo; and Abe, Shigeya, 4,262,647, Cl. 123-651.000.
Tangonan, Gregory L., to Hughes Aircraft Company. Planar star coupler device for fiber optics. 4,262,995, Cl. 350-96.160.
Taniyama, Eiji: *See*—
Takeda, Makoto; Taniyama, Eiji; Ozawa, Yuji; Imanari, Makoto; Takahashi, Kunimasa; and Iwane, Hiroshi, 4,263,457, Cl. 568-316.000.
Taylor, Glenn R. Rotary operator. 4,263,486, Cl. 200-17.00R.
Taylor, Wayne H., to Borg-Warner Corporation. Drive coupling. 4,262,786, Cl. 192-46.000.
Tchon, Wallace E.: *See*—
Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., 4,263,664, Cl. 365-185.000.
Tektronix, Inc.: *See*—
Dagostino, Thomas P.; Miller, Bruce E.; and Navarro, Luis J., 4,263,593, Cl. 340-728.000.
Teledyne Canada, Limited: *See*—
Nutt, Wallace H., 4,262,834, Cl. 224-324.000.
Teledyne Industries, Inc.: *See*—
McDonald, William K., 4,262,412, Cl. 29-599.000.
Temple, Chester S., to PPG Industries, Inc. Storage stable polyolefin compatible non-crosslinking size for fiber glass strands. 4,263,082, Cl. 156-309.300.
Tennant Company: *See*—
Brown, Neil F.; Krier, Keith N.; Haub, Donald J.; and Waldhauser, Steven J., 4,262,382, Cl. 15-49.00R.
Tennant, Robert J., to AMP Incorporated. Under carpet cable connector. 4,263,474, Cl. 174-84.00C.
Tenneco Chemicals, Inc.: *See*—
Feldman, Martin L.; and De Groff, James T., 4,263,198, Cl. 260-40.00R.
Terahigashi, Tadao: *See*—
Itatani, Hiroshi; Matsuda, Kenji; Terahigashi, Tadao; Kisita, Etsuzi; and Tone, Masatugu, 4,262,768, Cl. 180-242.000.
Testone, Anthony Q., to Statics, Inc. Thin sheet air ionizer. 4,263,636, Cl. 361-230.000.
Texaco Inc.: *See*—
Davis, Marshall E.; and Dille, Kenneth L., 4,263,014, Cl. 44-63.000.
Lynch, Charles R.; Harrison, Charles W.; and White, William D., 4,262,791, Cl. 196-132.000.
Sung, Rodney L.; Bialy, Jerzy J.; Dorn, Peter; Cullen, William P.; and Nebzydoski, John W., 4,263,015, Cl. 44-63.000.
Texas Alkyls, Inc.: *See*—
Malpass, Dennis B.; and Fannin, Loyd W., 4,263,217, Cl. 260-448.00A.
Th. Goldschmidt AG: *See*—
Schmidt, Gunter; and Fink, Hans-Ferdi, 4,263,250, Cl. 264-338.000.

Theijsmeijer, Frederik: *See—*
Roeder, Charles L.; Siefert, William J.; and Theijsmeijer, Frederik, 4,262,627, Cl. 118-318.000.

Theriault, Gerald E., to RCA Corporation. Double trapping of adjacent channel sound. 4,263,619, Cl. 358-196.000.

Thiele, Gerald H., to Stauffer Chemical Company. Synergistic herbicidal compositions. 4,263,038, Cl. 71-92.000.

Thieme, Peter C.: *See—*
Hagen, Helmut; Thieme, Peter C.; and Franke, Albrecht, 4,263,430, Cl. 542-458.000.

Thiemer, Klaus: *See—*
Engel, Jurgen; Kleemann, Axel; Tuckermann, Ute-Achterrath; and Thiemer, Klaus, 4,263,308, Cl. 424-267.000.

Thiersch, Friedrich; and Lucas, August, to Carl Still GmbH & Co. KG., Firma. Coke oven door assembly. 4,263,101, Cl. 202-248.000.

Thiokol Corporation: *See—*
Graham, William H.; and Shepard, Inella G., 4,263,444, Cl. 560-26.000.
Millen, Edward G.; and Pypcznski, Frank K., 4,263,078, Cl. 156-244.110.
Price, Raymond M.; and Reed, Russell, Jr., 4,263,070, Cl. 149-19.400.
Wilson, Jonathan W.; Prescott, Billy H.; and Cox, D. Morley, 4,263,243, Cl. 264-137.000.

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Logan, Maurus C.; Garner, Peter; and Stancati, Nicholas T., 4,262,417, Cl. 30-140.000.

Thomas, Jacob E., to NCR Corporation. High density matrix code. 4,263,504, Cl. 235-454.000.

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Edwards, Donald W.; Zukovich, Thomas M.; Thomas, Ronald D.; and Weigel, Ronald M., 4,263,068, Cl. 149-2.000.

Thominet, Michel; and Perrot, Jacques, to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France. N-(1-Methyl-2-pyrrolidinylmethyl)-2,3-dimethoxy-5-methylsulfamoyl benzamide and its derivatives, methods of preparing them and their application to the treatment of troubles of the lower part of the body. 4,263,316, Cl. 424-274.000.

Thompson, Darrell T.: *See—*
Berg, Bernard J.; and Thompson, Darrell T., 4,263,108, Cl. 204-109.000.

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Grover, Donald D.; and Thompson, Jerome A., 4,262,527, Cl. 73-116.000.

Thompson, Marlon H. Frontal assembly for vehicles. 4,262,954, Cl. 296-1.00S.

Thompson, Roger D.: *See—*
Gibson, Walter G.; and Thompson, Roger D., 4,263,612, Cl. 358-31.000.

Thompson, Stephen W.; Smith, Harry G.; and Rosler, Richard S., to Motorola, Inc. Reduced pressure induction heated reactor and method. 4,263,336, Cl. 427-45.100.

Thomson-CSF: *See—*
Deman, Pierre, 4,263,672, Cl. 375-111.000.
Felix, Pierre, 4,263,620, Cl. 358-213.000.
Gosset, Philippe, 4,263,532, Cl. 315-3.500.
Guenard, Pierre, 4,263,566, Cl. 331-82.000.
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Thornton, Alan; and Uttley, John S., to Bodina, Ltd. Multizonal binder impregnation. 4,263,358, Cl. 428-195.000.

Timm, Horst, to Blaupunkt-Werke GmbH. Magnetic transducing tape transport system. 4,263,628, Cl. 360-96.300.

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Howell, Norbert C.; and Tischuk, Walter, 4,262,514, Cl. 72-55.000.

Titeflex Corporation: *See—*
Lalikos, James M.; and Lefebvre, Kenneth E., 4,262,941, Cl. 285-110.000.

Tobbe, William P.: *See—*
Danko, Oliver L.; Steiss, William C.; Amor, William H., Jr.; Tobbe, William P.; Gardner, Thomas J.; and Shufflebarger, Earl D., 4,262,880, Cl. 251-288.000.

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Tobin, John C.: *See—*
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Todd, Paul: *See—*
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Katsumori, Teiji; Yokoyama, Shinji; and Kato, Tetuo, 4,262,779, Cl. 188-315.000.
Soeda, Yuji; and Goto, Akio, 4,262,472, Cl. 53-403.000.

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Tokuhara, Masaharu: *See—*
Hongu, Masayuki; Ohmuro, Shigeru; and Tokuhara, Masaharu, 4,263,675, Cl. 455-192.000.

Tokuhara, Mitsuhiro, to Canon Kabushiki Kaisha. Television camera. 4,263,613, Cl. 358-55.000.

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Morita, Keiichi; Kobayashi, Tetsuo; and Matsuo, Takeshi, 4,262,492, Cl. 62-324.600.
Okado, Chihiro, 4,263,541, Cl. 318-802.000.
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Tokyo Shibaura Electric Co., Ltd.: *See—*
Takahashi, Kouichi; Ishida, Hidekuni; and Yonezawa, Toshio, 4,263,067, Cl. 148-190.000.

Tolkiehn, Ulrich; and Wustefeld, Uwe, to Gernot Dittberner. Remote-controlled submersible drogue. 4,262,621, Cl. 114-245.000.

Tollefsen, Gerald E.: *See—*
Rausch, Maurice K.; Eickemeyer, Daniel B.; and Tollefsen, Gerald E., 4,263,127, Cl. 208-58.000.

Tomaszewicz, Diana K.: *See—*
Tripathi, Uma P.; and Tomaszewicz, Diana K., 4,263,277, Cl. 424-72.000.

Tomikawa, Ryoichi: *See—*
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Tominaga, Kiyonori, to Sony Corporation. Phase tracking loop circuit. 4,263,614, Cl. 358-69.000.

Tomita, Yoshifumi; and Nishizawa, Masahiro, to Hitachi, Ltd. Method of forming fluorescent screens of color picture tubes. 4,263,384, Cl. 430-25.000.

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Itatani, Hiroshi; Matsuda, Kenji; Terahigashi, Tadao; Kisita, Etsuzi; and Tone, Masatugu, 4,262,768, Cl. 180-242.000.

Toombs, Gary C.: *See—*
Gallusser, David O.; Pfendler, Donald L.; Uhlig, Herbert K.; Frear, David L.; Hemmer, Valentine J.; and Toombs, Gary C., 4,262,987, Cl. 339-258.00R.

Toppeto, Alphonse A., to Corcom, Inc. Apparatus for determining differential mode and common mode noise. 4,263,549, Cl. 324-127.000.

Toray Industries, Inc.: *See—*
Kazama, Takahiko; Hongo, Masahito; and Okuyama, Yutaka, 4,263,351, Cl. 427-355.000.
Otaki, Yukio; Umeda, Kazuo; and Nakagawa, Kiyoshi, 4,262,481, Cl. 57-245.000.
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Torii, Shinro; Tanaka, Toshio; Sasaki, Kouichi; Kato, Tsuneo; and Abe, Shigeya, to Nippondenso Co., Ltd. Contactless ignition system for internal combustion engines. 4,262,647, Cl. 123-651.000.

Touchton, James J.: *See—*
Rose, Andrew M.; and Touchton, James J., 4,263,627, Cl. 360-75.000.

Towmotor Corporation: *See—*
Brown, Vaikai K.; Gedeon, Roy M.; and Ping, David T., 4,262,766, Cl. 180-75.000.

Toyama Chemical Co., Ltd.: *See—*
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.

Toyoda-Koki Kabushiki-Kaisha: *See—*
Iida, Wataru; Tsujiuchi, Toshio; and Ishikawa, Shintaro, 4,262,454, Cl. 51-97.0NC.

Toyoda, Shuhei: *See—*
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Toyoda Soda Manufacturing Co., Ltd.: *See—*
Saito, Toshihiro; Tsutsumi, Yukihiro; and Arai, Shoji, 4,263,449, Cl. 560-263.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Motosugi, Katsuhiko; Toyoda, Shuhei; Takahashi, Hiroshi; and Kawabata, Kazunori, 4,262,639, Cl. 123-52.00M.
Nomura, Takao; Sakamoto, Tatsuo; and Umemoto, Yoshiro, 4,263,356, Cl. 428-138.000.

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Cassandrini, Paolo; and Tozzi, Antonio, 4,263,434, Cl. 544-198.000.

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Tripathi, Uma P.; and Tomaszewicz, Diana K., to American Cyanamid Company. Cold permanent wave composition and method containing 2-iminothiolane. 4,263,277, Cl. 424-72.000.

Trucco, Horacio A.: *See—*
Roffe, Gerald A.; and Trucco, Horacio A., 4,262,482, Cl. 60-736.000.

Truck Safety Systems, Inc.: *See—*
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TRW Inc.: *See—*
Goff, Raymon L.; and Rau, Jim L., 4,262,580, Cl. 91-532.000.
Lathlaen, Richard A., 4,263,525, Cl. 310-155.000.

TSI Incorporated: *See—*
Sathyakumar, Rajabushanan, 4,263,002, Cl. 356-349.000.

Tsuchida, Shizuo: *See—*
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Tu, Hosheng; and DeCoster, David C., to UOP Inc. Low coke-make FCC catalyst. 4,263,174, Cl. 252-455.00Z.
Tuck, Richard L., Sr.: *See*—
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Tundo, Antonio: *See*—
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Turold, William E.; Cufaude, Marvin O.; Diaz, Frank A.; and Hanson, Robert A., to Johnson Farm Machinery Co., Inc. Fresh market tomato harvester. 4,262,477, Cl. 56-327.00R.
Turpin, Edward T., to SCM Corporation. Anodic electrocoating compositions. 4,263,194, Cl. 260-29.6RW.
Twin Disc, Incorporated: *See*—
Schneider, Raymond C., 4,262,781, Cl. 192-4.00B.
Tybus, Gerd; and Neuking, Hartmut, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschraankter Haftung. Gas mixture separation apparatus. 4,263,026, Cl. 55-344.000.
Tykwinski, Leonard M. Chuck having keep stop and accessories. 4,262,916, Cl. 279-1.00S.
Uchida, Isamu; and Hirata, Akira, to Laurel Bank Machine Co., Ltd. Suction head in a paper sheet counting machine. 4,262,896, Cl. 271-90.000.
Ueda, Yoshio: *See*—
Sugimoto, Seiji; Ueda, Yoshio; and Somei, Kunio, 4,262,582, Cl. 493-25.000.
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Uemura, Masahiro; Harada, Chikao; Sakurado, Kenichi; and Kakumu, Tsunehito, to Nippon Colin Co., Ltd. Sphygmomanometer with an arrhythmia detecting mechanism. 4,262,674, Cl. 128-680.000.
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Ebner, Heinrich; Faust, Uwe; and Sittig, Wolfgang, 4,263,143, Cl. 210-629.000.
Henckens, Arnold; and Scheibler, Erich, 4,263,267, Cl. 423-393.000.
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Atkins, Kenneth E., 4,263,199, Cl. 260-40.00R.
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Dougherty, Steve J., 4,263,218, Cl. 260-450.000.
Gardner, Hugh C.; and Cotter, Robert J., 4,263,413, Cl. 525-34.000.
Louzos, Demetrios V.; and Vourlis, Harry, 4,263,382, Cl. 429-213.000.
Mago, Blake F., 4,263,167, Cl. 252-391.000.
McCullough, Robert W.; and Hewett, Thomas A., 4,262,657, Cl. 126-436.000.
Nausedas, Joseph A.; and Eichin, Harry P., 4,262,803, Cl. 206-554.000.
Phillips, Benjamin; Skraba, Walter J.; and McNeil, Daniel W., 4,263,447, Cl. 560-231.000.
Uniroyal, Inc.: *See*—
Sarkissian, Berge, 4,262,724, Cl. 152-330.0RF.
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Uniroyal Ltd.: *See*—
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Dorey, Roger J., 4,263,035, Cl. 65-348.000.
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Agriculture: *See*—
Platt, Steven G., 4,263,144, Cl. 210-658.000.
Air Force: *See*—
Reinhardt, Bruce A.; and Arnold, Fred E., 4,263,461, Cl. 568-636.000.
Army: *See*—
Bains, William R., 4,262,578, Cl. 89-1.00K.
Burg, Raymond H.; Lohmann, Arthur M.; and George, William C., 4,262,598, Cl. 102-246.000.
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Olson, Donald N., 4,262,597, Cl. 102-92.600.
Energy: *See*—
Bostick, William D.; Denton, Mark S.; and Dinsmore, Stanley R., 4,263,406, Cl. 435-291.000.
Gruen, Dieter M.; and Fields, Paul R., 4,262,739, Cl. 165-485.000.
Hull, Frederick C.; and Tobin, John C., 4,263,063, Cl. 148-136.000.
McEntire, Bryan J.; and Virkar, Anil V., 4,263,381, Cl. 429-193.000.
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Christou, Aristos; and Davey, John E., 4,263,605, Cl. 357-65.000.
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De Fonzo, Alfred P.; and Giallorenzi, Thomas G., 4,263,570, Cl. 333-157.000.
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Jensen, James D.; and Schoolar, Richard B., 4,263,604, Cl. 357-30.000.
Reed, Russell, Jr.; and Moore, Kenneth L., 4,263,069, Cl. 149-11.000.
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U.S. Philips Corporation: *See*—
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Bain, Leland S.; and Rudy, Thomas P., 4,263,071, Cl. 149-19.900.
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Meyerand, Russell G., Jr., 4,263,110, Cl. 204-128.000.
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Unitika Limited: *See*—
Hata, Yuzo; and Kuratani, Katsumi, 4,263,203, Cl. 260-45.85H.
Universal Data Systems, Inc.: *See*—
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Ridenour, Ralph G., 4,262,942, Cl. 285-382.500.
University of California, The Regents of the: *See*—
Apple, Martin A.; Hunt, C. Anthony; and Yanagisawa, Hiroaki, 4,263,428, Cl. 536-17.00A.
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Hirschberg, Joseph G., 4,263,511, Cl. 250-343.000.
University Patents, Inc.: *See*—
Randolph, Alan D., 4,263,010, Cl. 23-230.00A.
UOP Inc.: *See*—
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Sih, John C., 4,263,210, Cl. 260-346.220.
Smith, Herman W., 4,263,445, Cl. 560-62.000.
Urquhart, Thomas N., to Programmed Coating Systems, Inc. Electrocoating equipment. 4,263,122, Cl. 204-300.0EC.
Ushiro, Soichiro, to CPC International Inc. Immobilized enzymes. 4,263,400, Cl. 435-177.000.
USM Corporation: *See*—
Piestert, Gerhard; and Gilch, Heinz G., 4,263,419, Cl. 525-305.000.
Uttley, John S.: *See*—
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Valette, Francois: *See—*
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Valimont, James L., to PPG Industries, Inc. Silane release surfaces on glass. 4,263,350, Cl. 427-352.000.

Valley Industries, Inc.: *See—*
Brzezinski, Joseph, 4,262,659, Cl. 126-449.000.

Van der Molen Machinefabrick B.V.: *See—*
Daenen, Bernardus, 4,262,683, Cl. 131-327.000.

VanAusdall, James G.: *See—*
Fredrickson, Lloyd A.; and VanAusdall, James G., 4,262,406, Cl. 29-433.000.

Van Broekhoven, Jacob; and Corth, Richard, to Westinghouse Electric Corp. Warm white fluorescent lamp having good efficacy and color rendering. 4,263,530, Cl. 313-487.000.

Vance, Fred L., Jr.: *See—*
Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,263,422, Cl. 526-97.000.

Vanchot, Andre H. Plow blade attachment system. 4,262,753, Cl. 37-41.000.

Vanderborgh, Nicholas E.: *See—*
Elliott, Guy R. B.; Vanderborgh, Nicholas E.; and McDaniel, Milton W., 4,262,747, Cl. 166-305.00R.

van der Lely, Cornelis. Torque converter. 4,262,555, Cl. 74-690.000.

Vander Velden, Edward L.; and Erdman, Gerald D., to Venturmation, Inc. Air cleaning device. 4,263,024, Cl. 55-122.000.

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VanDerZee, William P. Remote control steering attachment for a steering wheel. 4,262,618, Cl. 114-144.00R.

Van Doorn, Donald W.: *See—*
Englett, Robert R.; Conner, John M.; Harmon, William A.; Hawkins, James B.; Pease, William C., III; and Van Doorn, Donald W., 4,262,390, Cl. 19-50.000.

Van Hemmen, Dirk J.; Reinink, Jan; and de Vries, Jochem J., to U.S. Philips Corporation. Shaving apparatus. 4,262,416, Cl. 30-43.600.

van Roosbroeck, Willy W.: *See—*
Sinclair, William R.; and van Roosbroeck, Willy W., 4,263,032, Cl. 65-3.00A.

van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L. Hydroxy benzohydroxamic acids and benzamides. 4,263,322, Cl. 424-324.000.

Vargiu, Silvio; Paparatto, Pietro; and Parodi, Antonio, to Euteco S.p.A. Moulding compositions including a mixture of two polyesters. 4,263,195, Cl. 260-31.8XA.

Varian Associates, Inc.: *See—*
Kolmann, Knute E., 4,263,066, Cl. 148-187.000.
Miram, George, 4,263,528, Cl. 313-293.000.

Varnas, Joseph; and Schneider, Horst W. Multi-vortical separator. 4,263,027, Cl. 55-346.000.

Varta Batterie Aktiengesellschaft: *See—*
Riedl, Werner, 4,263,380, Cl. 429-162.000.

Vaseen, Vesper A. Internal combustion engine-exhaust gases and particulate treatment. 4,263,263, Cl. 423-212.000.

Vaughn, John P.; and Reynolds, Charles W., to VSI Corporation. Torque control installation and removal tool. 4,262,501, Cl. 64-29.000.

VEB Mansfeld Kombinat Wilhelm Pieck: *See—*
Primke, Konrad; and Papsdorf, Peter, 4,263,468, Cl. 13-2.00P.

Venturmation, Inc.: *See—*
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Verbatim Corporation: *See—*
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Verdier, Jean-Michel: *See—*
Prudhon, Francois; Scicluna, Augustin; and Verdier, Jean-Michel, 4,263,234, Cl. 261-153.000.

Vereinigte Edelstahlwerke Aktiengesellschaft: *See—*
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Kalasek, Karl, 4,263,258, Cl. 422-113.000.

Vereinigte Osterreichische Eisen-und Stahlwerke - Alphine Montan Aktiengesellschaft: *See—*
Sigott, Siegfried; Schetine, Otto R.; Zitz, Alfred J.; and Althaler, Wilhelm F., 4,263,005, Cl. 405-303.000.

Vetter, Jochen: *See—*
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Viale, Maurice S.: *See—*
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Vickers Limited: *See—*
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Vinals, Joaquin F.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,149, Cl. 252-8.900.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,263,208, Cl. 260-345.100.

Vinson, James D. Playground set. 4,262,900, Cl. 272-113.000.

Virginia Plastics Company: *See—*
Bogese, Stephen B., II, 4,262,983, Cl. 339-97.00C.

Virkar, Anil V.: *See—*
McEntire, Bryan J.; and Virkar, Anil V., 4,263,381, Cl. 429-193.000.

Vischer, Harold H.: *See—*
Price, Donald R., 4,263,074, Cl. 156-110.00R.

Vischer, Harold H., Jr.: *See—*
Price, Donald R., 4,263,074, Cl. 156-110.00R.

Vischer, Harold Harrison, Jr.: *See—*
Price, Donald R., 4,262,719, Cl. 152-158.000.

Vischer, Harold Harry: *See—*
Price, Donald R., 4,262,719, Cl. 152-158.000.

Vischer, Michael L.: *See—*
Price, Donald R., 4,263,074, Cl. 156-110.00R.

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Vock, Manfred H.: *See—*
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Voegle, Guenther, to Robert Bosch GmbH. Method and apparatus for producing one-piece capsules. 4,263,251, Cl. 264-503.000.

Vogel, Klaus, to Siemens Aktiengesellschaft. Apparatus for identifying objects and persons. 4,263,595, Cl. 343-6.5SS.

Voith Transmit GmbH: *See—*
Bretzger, Reinhard; Kienle, Fritz; and Lindenthal, Hans, 4,262,405, Cl. 29-252.000.

Vojta, Karel E.: *See—*
Bernatt, Joseph; and Vojta, Karel E., 4,263,572, Cl. 335-26.000.

Volpenhein, Robert A., to Procter & Gamble Company, The. Diglyceride manufacture. 4,263,216, Cl. 260-410.700.

von der Ohe, Marianne; Sandow, Jurgen K.; and von Rechenberg, Wolfrad, to Hoechst Aktiengesellschaft. LH-RH-Peptides as contraceptives. 4,263,282, Cl. 424-177.000.

Von Knorring, Enar S. Roller blinds. 4,262,729, Cl. 160-242.000.

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von der Ohe, Marianne; Sandow, Jurgen K.; and von Rechenberg, Wolfrad, 4,263,282, Cl. 424-177.000.

von Rintelen, Harald: *See—*
Klotzer, Sieghart; Moisar, Erik; and von Rintelen, Harald, 4,263,396, Cl. 430-409.000.

Vora, Kakubhai R.: *See—*
Kulkarni, Arun B.; and Vora, Kakubhai R., 4,263,274, Cl. 424-46.000.

Vork, William D., to Graco, Inc. Method of mixing liquids in closed containers. 4,263,003, Cl. 366-348.000.

Voronin, Nikolai G.: *See—*
Bochkarev, Ellin P.; Voronin, Nikolai G.; Korobov, Oleg E.; Maslov, Vadim N.; and Nikitina, Irina B., 4,262,630, Cl. 118-715.000.

Voskresensky, Gennady L.: *See—*
Belykh, Sergei I.; Davydov, Anatoly B.; Khromov, Gennady L.; Moschensky, Anatoly D.; Movshovich, Ilya A.; Roitberg, Gennady I.; Voskresensky, Gennady L.; Pershin, Gely G.; and Moskvitin, Valery A., 4,263,185, Cl. 260-17.40R.

Vourlis, Harry: *See—*
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Voves, James E.: *See—*
Wise, Louis; and Voves, James E., 4,262,957, Cl. 296-37.100.

Vrana, Edward E.: *See—*
McCombs, Norman R.; and Vrana, Edward E., 4,263,018, Cl. 55-18.000.

Vrisakis, Georges: *See—*
Michel, Max; Vrisakis, Georges; Seigneurin, Laurent; and Bouge, Gilbert, 4,263,266, Cl. 423-329.000.

VSI Corporation: *See—*
Vaughn, John P.; and Reynolds, Charles W., 4,262,501, Cl. 64-29.000.

Vydec, Inc.: *See—*
Marano, Herbert W., 4,262,894, Cl. 271-4.000.

Vyzhimov, Vladimir I.: *See—*
Zakurdaev, Anatoly V.; Vyzhimov, Vladimir I.; Gladkov, Vladimir P.; and Petrov, Valery I., 4,263,342, Cl. 427-123.000.

W-K-M Wellhead Systems, Inc.: *See—*
Godare, William L., 4,263,025, Cl. 55-185.000.

W. R. Grace & Co.: *See—*
Mosely, Gordon P.; and Dillahunty, Michael D., 4,262,641, Cl. 123-335.000.
Wilhelm, Kenneth W.; and Bellino, Ralph R., 4,262,403, Cl. 29-220.000.

Wacker-Chemie GmbH: *See—*
Eck, Herbert; Kirst, Paul-Gerhard; and Lechner, Wilhelm, 4,263,191, Cl. 260-29.60S.

Wada, Yuichi: *See—*
Mori, Teijiro; Wada, Yuichi; and Hamano, Suenobu, 4,263,574, Cl. 337-161.000.

Waegaert, Pierre; and Battard, Jean-Claude, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Wrapper distributing support band for the manufacture of cigars. 4,262,681, Cl. 131-105.000.

Wagener, Heinrich; and Blessman, Heinz, to Carl Zeiss-Stiftung. Mechanical stage for microscopes. 4,262,991, Cl. 350-86.000.

Wagener, Klaus: *See*—
Paschke, Manfred; Wagener, Klaus; and Wald, Maximilian, 4,263,403, Cl. 435-172.000.

Wagner, Eugene R.: *See*—
Matthews, Donald P.; Wagner, Eugene R.; and McDermott, Roger D., 4,263,320, Cl. 424-319.000.

Wagner, Kuno; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Chemically stabilized azulmic acids, processes for their preparation and their use. 4,263,181, Cl. 260-9.000.

Wagner, William E.; and Davis, James A., to PPG Industries, Inc. Airless spray method for depositing electroconductive tin oxide coatings. 4,263,335, Cl. 427-29.000.

Wahnschaff, Paul. Gluer lockdown. 4,262,626, Cl. 118-247.000.

Wakabayashi, Kuniaki: *See*—
Kobayashi, Ryuji; and Wakabayashi, Kuniaki, 4,263,030, Cl. 65-2.000.

Wald, Maximilian: *See*—
Paschke, Manfred; Wagener, Klaus; and Wald, Maximilian, 4,263,403, Cl. 435-172.000.

Waldhauser, Steven J.: *See*—
Brown, Neil F.; Krier, Keith N.; Haub, Donald J.; and Waldhauser, Steven J., 4,262,382, Cl. 15-49.00R.

Walker, Darrell W.: *See*—
Drehman, Lewis E.; Farha, Floyd E., Jr.; and Walker, Darrell W., 4,263,133, Cl. 208-134.000.

Walker, David M.; and Stevenson, Alastair K., to Hughes Microelectronics, Ltd. Spark timing control circuit for controlling the timing of spark ignition of an internal combustion engine. 4,262,644, Cl. 123-418.000.

Wallace Murray Corporation: *See*—
Bremer, Robert C., Jr., 4,262,553, Cl. 74-574.000.

Wallis, Bernard J. Cut-off mechanism for corrugated strip. 4,262,568, Cl. 83-176.000.

Wallis, Craig: *See*—
Melnick, Joseph L.; and Wallis, Craig, 4,263,405, Cl. 435-291.000.

Walter, Henry J.: *See*—
Springer, William E.; and Walter, Henry J., 4,263,500, Cl. 219-377.000.

Walter Stauffenberg KG: *See*—
Menshen, Arnold, 4,262,869, Cl. 248-74.00R.

Wampler, Galen L.: *See*—
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 4,263,322, Cl. 424-324.000.

Wang, Cheng-Chi; and Vanderwyck, August H. B., to Rockwell International Corporation. Semi-open liquid phase epitaxial growth system. 4,263,065, Cl. 148-171.000.

Wang, Yue G.: *See*—
Wickstrom, Gary H.; Knell, Everett W.; Shaw, Benjamin W.; and Wang, Yue G., 4,263,124, Cl. 208-8.00R.

Wang, Yueh: *See*—
Bichsel, Stanley E.; Wang, Yueh; and Sandre, Andrew M., 4,263,052, Cl. 127-41.000.

Ward, Carter J. Solar-energy-powered sun tracker. 4,262,654, Cl. 126-425.000.

Warren, Henry R., to RCA Corporation. Headwheel servo lock verification with stationary head. 4,263,625, Cl. 360-31.000.

Wasserman, Allan; and Lowenstein, Frederick A., to Lowenstein, Frederick A.; Wasserman, Ronnee M.; and Wasserman, Allan. Novelty yarn and method and apparatus of making same. 4,262,480, Cl. 57-227.000.

Wasserman, Ronnee M.: *See*—
Wasserman, Allan; and Lowenstein, Frederick A., 4,262,480, Cl. 57-227.000.

Watanabe, Tsuyoshi: *See*—
Saito, Takashi; and Watanabe, Tsuyoshi, 4,263,391, Cl. 430-125.000.

Waters, George F., to Applied Fiberoptics. Surgical microscope with solenoid driven magnification changer. 4,262,699, Cl. 350-39.000.

Watrous, Donald L.; Jones, Dwight V.; and McArthur, Raymond J., to General Electric Company. Control circuit for controlling battery voltage transition rate in an automotive electrical system. 4,263,543, Cl. 322-8.000.

Watts, Gary P., to G.D.I. Electronics. Ultrasonic intrusion alarm system. 4,263,665, Cl. 367-94.000.

Watts, Michelle M.: *See*—
Egan, Richard R.; and Watts, Michelle M., 4,263,177, Cl. 252-547.000.

Weathers, Warren O. Kite having high lift to drag ratio. 4,262,866, Cl. 244-153.00R.

Weaver, George D.: *See*—
Giambalvo, Melcheore F., 4,263,054, Cl. 134-21.000.

Weaver, James C.: *See*—
Seymour, Robert W.; Weaver, James C.; and Wright, Benny W., 4,263,364, Cl. 428-287.000.

Weaver, Scott S.: *See*—
Giambalvo, Melcheore F., 4,263,054, Cl. 134-21.000.

Webb, Jimmy L.: *See*—
Mark, Victor; Webb, Jimmy L.; and Williams, Joseph B., 4,263,201, Cl. 260-45.70S.

Webb, Paul D., to Ingersoll-Rand Company. Oil supply means for a machine. 4,262,775, Cl. 184-6.400.

Weber, Frank; Jericho, Erwin; and Friedrichs, Werner, to Eisenwerk-Gesellschaft Maximilianshutte. Pierced metal tube blanks and methods of making such blanks. 4,262,516, Cl. 72-348.000.

Weber, Harold J. Translative intelligencer apparatus providing polyindicative response. 4,263,552, Cl. 324-326.000.

Weber, Horst, to Hellige GmbH. Amplifier arrangement with suppression of spurious signals. 4,263,561, Cl. 330-149.000.

Weber, Jurgen; and Springer, Helmut, to Ruhrchemie Aktiengesellschaft. Process for preparing methyl-nonyl-acetaldehyde. 4,263,460, Cl. 568-457.000.

Weber, Karl H.; Bauer, Adolf; Danneberg, Peter; and Kuhn, Franz J., to Boehringer Ingelheim GmbH. 8-Bromo-6-(o-chloro-phenyl)-4H-S-triazolo-[3,4,-c]-thieno-[2,3-e]-1,4-diazepines and salts thereof. 4,263,310, Cl. 424-269.000.

Weber, Kurt; Luthi, Christian; and Meyer, Hans R., to Ciba-Geigy Corporation. Cationic fluorescent whitening agents. 4,263,431, Cl. 542-459.000.

Weeden, Frank G.; and Foster, R. Don. Method of making expandable member for forming seals and applying force. 4,263,237, Cl. 264-219.000.

Wegener, John A.; and Garvey, Joseph F., to Slo-Pitcher, Inc. Softball pitching machine. 4,262,648, Cl. 124-6.000.

Wegmuller, Hans; and Wurster, Rudolf F., to Ciba-Geigy Corporation. Process for removing cationic substances from aqueous solutions. 4,263,146, Cl. 210-679.000.

Weigel, Ronald M.: *See*—
Edwards, Donald W.; Zukovich, Thomas M.; Thomas, Ronald D.; and Weigel, Ronald M., 4,263,068, Cl. 149-2.000.

Weil, Sanford A.; Punwani, Dharamvir; and Bodle, William W., to Institute of Gas Technology. Production of synthetic hydrocarbon fuels from peat. 4,263,125, Cl. 208-8.00R.

Weir, Gary L., to Pullman Incorporated. Multi-purpose over-the-highway trailer arrangements. 4,262,923, Cl. 280-423.00B.

Welk, Steven. Method and apparatus for sensing the clearance of fault current on an ac transmission line. 4,263,635, Cl. 361-71.000.

Welker, David W.: *See*—
Fertl, Walter H.; and Welker, David W., 4,263,509, Cl. 250-255.000.

Wellner, Wolfgang: *See*—
Buysch, Hans-Josef; Gruber, Hermann; Wellner, Wolfgang; and Leiritz, Karl, 4,263,162, Cl. 252-182.000.

Welter, Clarence L.; and Riggens, Stephen R., to Electrical Equipment, Inc. Air switch. 4,263,487, Cl. 200-48.0KB.

Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Radial tire with a low angle carcass overlay ply. 4,262,726, Cl. 152-361.00R.

Went, Werner: *See*—
Stemme, Otto; Lermann, Peter; Stenzenberger, Volkmar; Went, Werner; Herzig, Eberhard; and Hoesch, Friedrich-Ludolph, 4,263,000, Cl. 355-27.000.

Wenthe, Stephen J., Jr., to Xerox Corporation. Inverter with variable buckling control. 4,262,895, Cl. 271-65.000.

Wenz, Herbert, to Pfaff Industriemaschinen GmbH. Cover construction for a sewing machine work support column. 4,262,615, Cl. 112-260.000.

West, Arthur C., to Minnesota Mining and Manufacturing Company. Vulcanizable blend of bromine-containing fluoropolymer and fluorosilicone gums. 4,263,414, Cl. 525-102.000.

Westermann, Wilhelm. Demetalizing a metalized, plastic foil along a strip or edge portion. 4,263,354, Cl. 427-444.000.

Western Electric Company, Inc.: *See*—
Bankes, Kristen E.; Herman, Carl H.; Johnson, Anderson F., Jr.; and Large, Donald M., 4,262,805, Cl. 209-656.000.
Lange, Glenn E.; and Lynch, Dennis M., 4,263,479, Cl. 178-46.000.
Martyniak, Gerald J., 4,263,341, Cl. 427-97.000.

Westinghouse Electric Corp.: *See*—
Cooper, Frank W., Jr.; and Castner, Raymond P., 4,262,402, Cl. 29-157.400.
Glenn, Robert G., 4,262,487, Cl. 60-757.000.
Lackey, Robert S.; and Young, Robert R., 4,262,493, Cl. 62-324.600.
Maier, Alfred E.; and Farley, James R., 4,263,492, Cl. 200-288.000.
McCaskey, Harold O., Jr.; and Cannady, Daniel L., Jr., 4,263,373, Cl. 428-531.000.
Van Broekhoven, Jacob; and Corth, Richard, 4,263,530, Cl. 313-487.000.

Westley, John: *See*—
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Westvaco Corporation: *See*—
Fremion, Edwin A., 4,262,837, Cl. 229-23.00R.

Wetzel, Friedrich, to A. Stotz Aktiengesellschaft. Foundry molding-apparatus and method. 4,262,731, Cl. 164-19.000.

Weygant, Nelson. Snow scooter. 4,262,767, Cl. 180-192.000.

Wheeler, Edward L.; and Jancis, Elmar H., to Uniroyal, Inc. Process for making 3-(3,5-dialkyl-4-hydroxyphenyl)propionate esters of hydroxyalkyloxamides. 4,263,446, Cl. 560-75.000.

Whelan, James P.: *See*—
Berger, Joseph C.; Fitzpatrick, James E.; and Whelan, James P., 4,263,247, Cl. 264-273.000.

Whirlpool Corporation: *See*—
Kretchman, Gerald L.; and Morrison, Russell J., 4,262,870, Cl. 248-188.300.

White, Donald W., to Stoelting, Inc. Wire belt splicer. 4,262,392, Cl. 24-36.000.

White, John F., to Halcon Research and Development Corp. Conversion of aldehydes. 4,263,443, Cl. 549-83.000.

White, Richard J.; Lancini, Giancarlo; and Antonini, Piero, to Gruppo Lepetit S.p.A. Rifamycin R and microorganisms useful in the production of rifamycins. 4,263,404, Cl. 435-253.000.

White, William D.: *See*—
Lynch, Charles R.; Harrison, Charles W.; and White, William D., 4,262,791, Cl. 196-132.000.

Whitehorn, Vincent J.: *See*—
Streeter, Robert R.; Whitehorn, Vincent J.; and Nicholas, Earl C., 4,263,330, Cl. 426-414.000.

Whiting, Philip C., Jr., to Ludlow Corporation. Method of making package for photographic film. 4,263,080, Cl. 156-244.110.

Wicki, Heinz: *See*—
Studer, Martin; and Wicki, Heinz, 4,263,229, Cl. 260-145.00C.

Wickstrom, Gary H.; Knell, Everett W.; Shaw, Benjamin W.; and Wang, Yue G., to Occidental Petroleum Corporation. Process for minimizing solids contamination of liquids from coal pyrolysis. 4,263,124, Cl. 208-8.00R.

Widner, Paul J.: *See*—
Spatz, David M.; and Widner, Paul J., 4,263,295, Cl. 424-249.000.

Wiebush, Le Moey: *See*—
Grover, Thomas B., Jr.; Wiebush, Le Moey; and Anderson, David G., 4,262,842, Cl. 235-92.00T.

Wiedenbeck, Roger D.; and Jackson, Eldon D., to Johnson Corporation, The. Internally compensated self-aligning rotary joint. 4,262,940, Cl. 285-61.000.

Wiedersum, George C.: *See*—
Gilkeson, Robert F.; and Wiedersum, George C., 4,262,736, Cl. 165-11.00R.

Wiegand, John R., to Echlin Manufacturing Company, The. Pulse generator using read head with Wiegand wire. 4,263,523, Cl. 307-419.000.

Wiener, Murray, to Babcock & Wilcox Company, The. Vapor generator. 4,262,637, Cl. 122-478.000.

Wiggins Teape Limited: *See*—
Radvan, Bronislaw; and Dobson, David J., 4,263,344, Cl. 427-150.000.

Wild, James H.: *See*—
Buckley, Alan J.; Singer, Michael; and Wild, James H., 4,263,424, Cl. 528-85.000.

Wiles, Michael F.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., 4,263,650, Cl. 364-200.000.

Wilhelm, Jurgen: *See*—
Ohlmeyer, Manfred; and Wilhelm, Jurgen, 4,263,028, Cl. 55-390.000.

Wilhelm, Kenneth W.; and Bellino, Ralph R., to W. R. Grace & Co. Valve spring compressor tool. 4,262,403, Cl. 29-220.000.

Wilhelmson, Jack L., to Lab-Line Instruments Inc. Variable proportioning control apparatus. 4,263,501, Cl. 219-497.000.

Willatt, Arnold F. Valve for flexible tubing and method. 4,262,876, Cl. 251-9.000.

Willem, Michel, to Societe Anonyme dite: Ceraver. Insulator equipped with a device for fixing a bare cable thereto. 4,263,478, Cl. 174-169.000.

Williams, Arthur J., to Commercial Shearing, Inc. Low friction drag seals. 4,262,915, Cl. 277-188.00R.

Williams, Frederick C.; and Greene, Clarence A., to Hughes Aircraft Company. Wide-band, phase scanned antenna. 4,263,600, Cl. 343-854.000.

Williams, Joseph B.: *See*—
Mark, Victor; Webb, Jimmy L.; and Williams, Joseph B., 4,263,201, Cl. 260-45.70S.

Wilson, Carol A.: *See*—
Gates, Peter S.; Baldwin, Derek; Wilson, Carol A.; and Gillon, John, 4,263,037, Cl. 71-88.000.

Wilson, Clark M.; and Barrett, Robert B., to H. B. Fuller Company. Conveyor lubricating system. 4,262,776, Cl. 184-15.00R.

Wilson, Jonathan W.; Prescott, Billy H.; and Cox, D. Morley, to Thiokol Corporation. Method for making a flexible bearing. 4,263,243, Cl. 264-137.000.

Wilson, Robert M., Sr., to Dare Products, Inc. Electric fence insulator. 4,263,477, Cl. 174-158.00F.

Winand, Louis, to Rhone-Poulenc Industries. Process for obtaining a desulfated phosphoric acid for use in foods and beverages. 4,263,265, Cl. 423-321.00S.

Winans, Esther D.: *See*—
O'Halloran, Rosemary; and Winans, Esther D., 4,263,153, Cl. 252-475.000.
Ryer, Jack; Girgenti, Salvatore J.; and Winans, Esther D., 4,263,154, Cl. 252-47.500.

Wine, Charles M., to RCA Corporation. Touch switch arrangement useful in a television receiver. 4,263,618, Cl. 358-188.000.

Winship, Thomas E.: *See*—
Allison, Glenn L.; Winship, Thomas E.; and Justman, Daniel B., 4,262,760, Cl. 175-347.000.

Wirth, Louis F., Jr., to Dow Chemical Company, The. Recovery of ammonia or amine from a cation exchange resin. 4,263,145, Cl. 210-675.000.

Wirtz, Gerhard: *See*—
Schorr, Victor; and Wirtz, Gerhard, 4,263,102, Cl. 203-22.000.

Wischniewski, Martin: *See*—
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Wisco Corporation: *See*—
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Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Napoli, Joseph L., Jr.; and Onisko, Bruce L., 4,263,214, Cl. 260-397.200.

Wise, Louis; and Voves, James E., to Morris, Jeffrey M., a part interest. Parking ticket collection apparatus. 4,262,957, Cl. 296-37.100.

Wisniewski, Walter. Mail delivery indicator. 4,262,839, Cl. 232-35.000.

Wistreich, Hugo E.: *See*—
Olson, Dennis G.; and Wistreich, Hugo E., 4,263,329, Cl. 426-310.000.

Witco Chemical Corporation: *See*—
Stitzer, Phillip L.; and Deutsch, Stephen A., 4,262,847, Cl. 239-112.000.

Witenhafer, Donald E.: *See*—
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Withers, Christopher V.: *See*—
Gates, Allen P.; Hinch, Stephen C.; and Withers, Christopher V., 4,263,394, Cl. 430-287.000.

Withycombe, Donald A.; Mookherjee, Braja D.; Mussinan, Cynthia J.; Vock, Manfred H.; and Giacino, Christopher, to International Flavors & Fragrances Inc. Use of 2(2'-methylthiopropyl)-4,5-dimethyl-Δ^3-thiazoline to augment or enhance the aroma or taste of mashed potato flavor or mashed potato flavored foodstuffs. 4,263,332, Cl. 426-535.000.

Wittmann, Erwin J.: *See*—
Shanley, Robert L., II; Harwood, Leopold A.; and Wittmann, Erwin J., 4,263,610, Cl. 358-20.000.

Wolber, Robert; Maurer, Roland; and Jesse, Peter, to Gebruder Junghans GmbH. Methods and apparatus for assembling an electrical instrument. 4,263,667, Cl. 368-300.000.

Wolf, Tobin. Magic mailbox. 4,262,441, Cl. 46-1.00R.

Wolfer, Adolf; and Lehneis, Hans R. Orthopedic knee device. 4,262,664, Cl. 128-80.00C.

Woo, Edmund P., to Dow Chemical Company, The. Aromatic dianhydrides. 4,263,209, Cl. 260-345.90R.

Woo, Nea-Yea; and Edwards, Evan A., to Eastman Kodak Company. Slow-frame video camera/recorder and image-sensing and signal processing device for use therewith. 4,263,623, Cl. 360-10.000.

Workman, David E.; Bromley, Robert L.; Burzen, Don N.; and McNeill, Judith K., to Samsonite Corporation. Beauty case. 4,262,685, Cl. 132-79.00G.

Worm, Manfred: *See*—
Martin, Lawrence L.; and Worm, Manfred, 4,263,317, Cl. 424-278.000.

Wright, Andrew C. W., to Dzus Fastener Co., Inc. Quarter-turn fastener. 4,262,394, Cl. 24-73.0RM.

Wright, Benny W.: *See*—
Seymour, Robert W.; Weaver, James C.; and Wright, Benny W., 4,263,364, Cl. 428-287.000.

Wright Manufacturing Company: *See*—
Lacey, James A., 4,262,368, Cl. 3-1.911.

Wright, Paul L.: *See*—
Creger, Todd D.; Nelson, Steven R.; and Wright, Paul L., 4,262,518, Cl. 72-393.000.

Wrobel, Norbert E., to Minnesota Mining and Manufacturing Company. Tape dispenser. 4,262,835, Cl. 225-25.000.

Wu, Rong-Chun. Quick-operating bench vise. 4,262,892, Cl. 269-181.000.

Wujnovich, Ronald J.; Shufflebarger, Earl D.; and Steiss, William C., to Nupro Company. In-line fluid filter. 4,263,140, Cl. 210-247.000.

Wurster, Rudolf F.: *See*—
Wegmuller, Hans; and Wurster, Rudolf F., 4,263,146, Cl. 210-679.000.

Wustefeld, Uwe: *See*—
Tolkiehn, Ulrich; and Wustefeld, Uwe, 4,262,621, Cl. 114-245.000.

Wyckoff, Richard. Digital alarm system with variable alarm hysteresis. 4,263,583, Cl. 340-501.000.

Wyrough and Loser, Inc.: *See*—
Leo, Thomas J.; and Johansson, Anders H., 4,263,184, Cl. 260-17.4CL.

Xerox Corporation: *See*—
Ciccarelli, Roger N., 4,263,389, Cl. 430-106.000.
Schank, Richard L.; and Pochan, John M., 4,263,388, Cl. 430-59.000.
Wenthe, Stephen J., Jr., 4,262,895, Cl. 271-65.000.

Xicor, Inc.: *See*—
Owen, William H.; Simko, Richard T.; and Tchon, Wallace E., 4,263,664, Cl. 365-185.000.

Yabe, Ryohei: *See*—
Sagusa, Hisayuki; Nonura, Yasushi; and Yabe, Ryohei, 4,263,512, Cl. 250-373.000.

Yaegashi, Masayuki: *See*—
Takahashi, Katsuhiko; Doi, Hachiro; and Yaegashi, Masayuki, 4,262,475, Cl. 56-16.600.

Yamabe, Shigeru: *See*—
Fujimoto, Yasuo; and Yamabe, Shigeru, 4,263,437, Cl. 546-89.000.

Yamada, Keiichi: *See*—
Kobayashi, Masayoshi; Sakuranaka, Toru; and Yamada, Keiichi, 4,262,645, Cl. 123-502.000.

Yamada, Koichi; Harato, Takuo; and Kato, Hisakatsu, to Sumitomo Aluminium Smelting Company, Limited. Method for the removal of impurities from sodium aluminate solution. 4,263,261, Cl. 423-121.000.

Yamada, Sumio: *See*—
Haida, Osamu; Emi, Toshihiko; Yamada, Sumio; Sudo, Fumio; and Sonoda, Hiraku, 4,263,043, Cl. 75-58.000.

Yamada, Yozo; Hayashi, Kazuo; and Kobayashi, Heihachiro, to Pioneer Electronic Corporation. Combined magnetic tape head. 4,263,633, Cl. 360-129.000.

Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, to Mitsui Toatsu Chemicals, Incorporated; and Jujo Paper Co., Ltd. Color-developing sheet for pressure-sensitive recording sheets. 4,262,938, Cl. 282-27.500.

Yamaguchi, Takao; and Ohara, Yutaka, to Hiroyasu Funakubo. Visual sighting system. 4,263,656, Cl. 364-559.000.

Yamaguchi, Toshio: *See*—
Takefuta, Hideyasu; and Yamaguchi, Toshio, 4,262,787, Cl. 192-84.00T.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Nomura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, 4,262,710, Cl. 141-98.000.

Yamaichi Electric Mfg. Co., Ltd.: *See*—
Takahashi, Toru, 4,262,984, Cl. 339-97.00R.

Yamaki, Kiyoshi: *See*—
Oka, Takashi; Matsuoka, Hideoki; Mizote, Masanori; Yamaki, Kiyoshi; Nomura, Hiroyuki; and Mogi, Takaaki, 4,263,657, Cl. 364-561.000.

Yamamoto, Yasunobu; Ban, Hiroshi; Nakavishi, Katumi; Tomikawa, Ryoichi; Nakanishi, Katumi; Tomikawa, Ryoichi; and Kato, Toshitake. Friction member of non-asbestos. 4,262,788, Cl. 192-107.00M.

Yamanaka, Makoto; Kobayashi, Takehiko; and Fujino, Takashi, to Kao Soap Co., Ltd. Process for preparation of granules containing viscous substance at high concentration. 4,263,050, Cl. 106-287.170.

Yamanaka, Takeshi, to American Videonetics Corporation. Transport apparatus with differential force system. 4,262,859, Cl. 242-192.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, 4,263,432, Cl. 544-21.000.

Yamashita, Chikao: *See*—
Sugaya, Takao; Yamashita, Chikao; and Yoshida, Noriyuki, 4,262,614, Cl. 112-158.00E.

Yamashita, Keitaro; and Goto, Ryuji, to Hitachi Metals, Ltd. Residual toner removing device. 4,263,390, Cl. 430-125.000.

Yamato, Noboru: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,262,938, Cl. 282-27.500.

Yamazaki, Atsuki: *See*—
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, 4,263,432, Cl. 544-21.000.

Yamazaki, Hiroshi: *See*—
Hong, Pangbu; and Yamazaki, Hiroshi, 4,263,212, Cl. 260-347.500.

Yamuguchi, Kenzaburo: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamuguchi, Kenzaburo; Murakami, Hisamichi; Yamato, Noboru; and Hasegawa, Akira, 4,262,938, Cl. 282-27.500.

Yanagisawa, Hiroaki: *See*—
Apple, Martin A.; Hunt, C. Anthony; and Yanagisawa, Hiroaki, 4,263,428, Cl. 536-17.00A.

Yao, Shi-Kay, to Rockwell International Corporation. Chirp-grating lens for guided-wave optics. 4,262,996, Cl. 350-96.190.

Yardney Electric Corporation: *See*—
Fields, Larry D., 4,262,698, Cl. 137-625.500.

Yasuda, Takashi: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,263,292, Cl. 424-246.000.

Yasuhara, Takeshi: *See*—
Tamai, Mitsuru; and Yasuhara, Takeshi, 4,262,540, Cl. 73-718.000.

Yasumatsu, Jun: *See*—
Motonami, Masanao; Yasumatsu, Jun; and Kubota, Tatsushi, 4,262,932, Cl. 280-802.000.

Yeager, Ernest W.: *See*—
Roalstad, Walter L.; and Yeager, Ernest W., 4,262,665, Cl. 128-92.0BC.

Yeagley, Henry L. Continuous agitation rapid oxidation method. 4,263,135, Cl. 210-612.000.

Yeda Research & Development Co. Ltd: *See*—
Sela, Michael; Arnon, Ruth; Hurvitz, Esther; Maron, Ruth; and Levy, Ron, 4,263,279, Cl. 424-85.000.

Yllo, Walter: *See*—
Schumacher, Frederick G.; and Yllo, Walter, 4,263,196, Cl. 260-33.6UA.

Yoder, Max N. Electron beam-semiconductor diode hybrid device for phase control. 4,263,531, Cl. 315-3.000.

Yokogawa, Tomohisa: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,263,581, Cl. 340-168.00B.

Yokoyama, Shinji: *See*—
Katsumori, Teiji; Yokoyama, Shinji; and Kato, Tetuo, 4,262,779, Cl. 188-315.000.

Yonezawa, Toshio: *See*—
Takahashi, Kouichi; Ishida, Hidekuni; and Yonezawa, Toshio, 4,263,067, Cl. 148-190.000.

Yorikane, Masaharu, to Nippon Electric Co., Ltd. Low stress semiconductor device lead connection. 4,263,606, Cl. 357-71.000.

Yoshida Kogyo K. K.: *See*—
Yoshieda, Keiichi; and Kuse, Kazuki, 4,262,569, Cl. 83-386.000.

Yoshida Kogyo K.K.: *See*—
Oda, Kiyoshi, 4,262,502, Cl. 70-68.000.

Yoshida, Noriyuki: *See*—
Sugaya, Takao; Yamashita, Chikao; and Yoshida, Noriyuki, 4,262,614, Cl. 112-158.00E.

Yoshieda, Keiichi; and Kuse, Kazuki, to Yoshida Kogyo K. K. Apparatus for the fabrication of a slide fastener chain with reinforcement tapes. 4,262,569, Cl. 83-386.000.

Yoshioka, Yoshiaki: *See*—
Sakimoto, Seiichiro; and Yoshioka, Yoshiaki, 4,263,193, Cl. 260-29.6RB.

Yoshitomi, Yuji: *See*—
Kamohara, Hideaki; Yoshitomi, Yuji; Koyama, Takaichi; and Tamai, Yasumasa, 4,262,517, Cl. 72-370.000.

Young, Dale A., to Exxon Research & Engineering Co. Magnetically latchable liquid dispensing nozzle. 4,262,712, Cl. 141-392.000.

Young, James W.; and Schpok, Ricky K., to Dresser Industries, Inc. Combination seal and pressure relief valve for sealed drill string unit. 4,262,759, Cl. 175-227.000.

Young, Robert R.: *See*—
Lackey, Robert S.; and Young, Robert R., 4,262,493, Cl. 62-324.600.

Youngpeter, Paul: *See*—
Dukes, Paul; and Youngpeter, Paul, 4,262,628, Cl. 118-425.000.

Youngson, Charles R., Jr.: *See*—
Little, John C.; and Youngson, Charles R., Jr., 4,263,269, Cl. 423-488.000.

Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Exposure information indicating device. 4,262,997, Cl. 354-23.00D.

Yust, Paul J. Stadium seat arm gripping tray. 4,262,962, Cl. 297-194.000.

Zabinski, Bernard: *See*—
Gaucher, Antoine; and Zabinski, Bernard, 4,263,060, Cl. 148-6.300.

Zaccardelli, Delio: *See*—
Marconi, Walter; Bartoli, Francesco; Gulinelli, Silvio; Morisi, Franco; and Zaccardelli, Delio, 4,263,180, Cl. 260-8.000.

Zak, Otokar: *See*—
Kradolfer, Friedrich; and Zak, Otokar, 4,263,280, Cl. 424-114.000.

Zakurdaev, Anatoly V.; Vyzhimov, Vladimir I.; Gladkov, Vladimir P.; and Petrov, Valery I. Method of manufacturing mercury contact on a beryllium base. 4,263,342, Cl. 427-123.000.

Zapf, Gunter: *See*—
Kuhnert, Dieter; Meiler, Lothar; Rebholz, Herbert; and Zapf, Gunter, 4,262,611, Cl. 110-346.000.

Zaprazny, Joseph W. Lift adaptor for an electromagnet for hydraulic or excavator crane. 4,262,949, Cl. 294-65.500.

Zavisza, Daniel M., to American Cyanamid Company. Adhesion of textile cords to rubber using a butadiene-styrene vinylpyridine rubber latex and an aldehyde condensate-glyoxal reaction products mixture. 4,263,190, Cl. 260-29.4UA.

Zavodov, Rudolf V.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.

Zeiss Ikon Ag Goerzwerk: *See*—
Tobel, Helmut, 4,262,506, Cl. 70-419.000.

Zellmer, Neale A., to GTE Automatic Electric Laboratories, Inc. Current limiter for switched DC-to-DC converter. 4,263,644, Cl. 363-26.000.

Zellmer, Neale A., to GTE Automatic Electric Laboratories, Inc. Self-starting carrier subscriber power supply. 4,263,645, Cl. 363-49.000.

Zenith Radio Corporation: *See*—
Barton, Stephen, 4,263,539, Cl. 318-664.000.
Lee, Ronald B., 4,263,616, Cl. 358-166.000.
Steinmetz, Richard J.; and Beaumont, Gregory J., 4,263,615, Cl. 358-148.000.

Zhukova, Elena I.: *See*—
Alexandrov, Vyacheslav S.; Guschin, Alexandr E.; Zavodov, Rudolf V.; Zhukova, Elena I.; Ivanov, Alexandr A.; Fofanova, Tatyana S.; Mikhailov, Evgeny I.; Dianov, Ivan M.; Luzin, Pavel M.; Sergeev, Igor A.; Pankratova, Lidia A.; Krylova, Vera E.; and Leibenzon, Semen A., 4,263,241, Cl. 264-121.000.

Ziehnert, Richard: *See*—
Pratt, George F.; and Ziehnert, Richard, 4,262,714, Cl. 144-193.00A.

Zimmer Aktiengesellschaft: *See*—
Rothe, Hans-Jochen; Freund, Peter; Gey, Werner; and Heinze, Helmut, 4,263,425, Cl. 528-309.000.

Zinsberger, Alfons: *See*—
Leuschner, Udo; and Zinsberger, Alfons, 4,262,585, Cl. 99-280.000.

Zitz, Alfred J.: *See*—
Sigott, Siegfried; Schetine, Otto R.; Zitz, Alfred J.; and Althaler, Wilhelm F., 4,263,005, Cl. 405-303.000.

Zukovich, Thomas M.: *See*—
Edwards, Donald W.; Zukovich, Thomas M.; Thomas, Ronald D.; and Weigel, Ronald M., 4,263,068, Cl. 149-2.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF APRIL, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Analog Devices, Incorporated: *See*—
Brokaw, Adrian P., Re. 30,586, Cl. 323-314.000.

Brokaw, Adrian P., to Analog Devices, Incorporated. Solid-state regulated voltage supply. Re. 30,586, Cl. 323-314.000.

Citizen Watch Co. Ltd.: *See*—
Tamaru, Munetaka; Kume, Kazunari; Oono, Hideshi; Watanabe, Minoru; Sato, Hideo; and Morokawa, Shigeru, Re. 30,588, Cl. 368-66.000.

Donahoo, Joe T., to General Electric Company. Concentrated winding salient-pole shaded pole motors having multiple short circuited shading coils for each pole. Re. 30,585, Cl. 310-172.000.

Dow Chemical Company, The: *See*—
Nelson, Donald L., Re. 30,583, Cl. 525-531.000.

General Electric Company: *See*—
Donahoo, Joe T., Re. 30,585, Cl. 310-172.000.

Kume, Kazunari: *See*—
Tamaru, Munetaka; Kume, Kazunari; Oono, Hideshi; Watanabe, Minoru; Sato, Hideo; and Morokawa, Shigeru, Re. 30,588, Cl. 368-66.000.

Morokawa, Shigeru: *See*—
Tamaru, Munetaka; Kume, Kazunari; Oono, Hideshi; Watanabe, Minoru; Sato, Hideo; and Morokawa, Shigeru, Re. 30,588, Cl. 368-66.000.

Nelson, Donald L., to Dow Chemical Company, The. Vinyl ester resin compositions containing dicyclopentadiene alkenoate. Re. 30,583, Cl. 525-531.000.

Oono, Hideshi: *See*—
Tamaru, Munetaka; Kume, Kazunari; Oono, Hideshi; Watanabe, Minoru; Sato, Hideo; and Morokawa, Shigeru, Re. 30,588, Cl. 368-66.000.

Owens-Illinois: *See*—
Russell, Charles R., Re. 30,584, Cl. 136-246.000.

RCA Corporation: *See*—
Schade, Otto H., Jr., Re. 30,587, Cl. 330-257.000.

Russell, Charles R., to Owens-Illinois. Optical concentrator and cooling system for photovoltaic cells. Re. 30,584, Cl. 136-246.000.

Sato, Hideo: *See*—
Tamaru, Munetaka; Kume, Kazunari; Oono, Hideshi; Watanabe, Minoru; Sato, Hideo; and Morokawa, Shigeru, Re. 30,588, Cl. 368-66.000.

Schade, Otto H., Jr., to RCA Corporation. Differential amplifier circuit. Re. 30,587, Cl. 330-257.000.

Schneider, Herbert, to Sud-Chemie AG. Supplementary support for vehicles. Re. 30,581, Cl. 280-81.00R.

Sintef: *See*—
Ugelstad, John, Re. 30,582, Cl. 260-29.6XA.

Sud-Chemie AG: *See*—
Schneider, Herbert, Re. 30,581, Cl. 280-81.00R.

Tamaru, Munetaka; Kume, Kazunari; Oono, Hideshi; Watanabe, Minoru; Sato, Hideo; and Morokawa, Shigeru, to Citizen Watch Co. Ltd. Electric timepiece for displaying the operating condition thereof. Re. 30,588, Cl. 368-66.000.

Ugelstad, John, to Sintef. Process for preparing latex. Re. 30,582, Cl. 260-29.6XA.

Watanabe, Minoru: *See*—
Tamaru, Munetaka; Kume, Kazunari; Oono, Hideshi; Watanabe, Minoru; Sato, Hideo; and Morokawa, Shigeru, Re. 30,588, Cl. 368-66.000.

LIST OF DESIGN PATENTEES

Adler, Herbert, to Crest Industries Corp. Directory. 258,968, 4-21-81, Cl. D19-76.000.

Adler, Herbert, to Crest Industries Corp. Directory. 258,969, 4-21-81, Cl. D19-76.000.

Aktiebolaget Bahco Verktyg: *See*—
Wahlberg, Ulf H., 258,930, Cl. D8-22.000.

Aliczky, Laszlo: *See*—
Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,983, Cl. D23-43.000.

Allard, Herbert W. Swimming pool. 258,990, 4-21-81, Cl. D25-2.000.

American Cyanamid Company: *See*—
Grodin, Adam J., 258,939, Cl. D9-424.000.

American Standard Inc.: *See*—
Saporito, Dominic A.; and Genaro, Donald M., 258,981, Cl. D23-25.000.

Saporito, Dominic A.; and Genaro, Donald M., 258,982, Cl. D23-26.000.

AMP Incorporated: *See*—
Sotolongo, Thomas J., 258,934, Cl. D8-353.000.

Bevilacqua, Ernest M.; Bruce, Gordon P.; Danielson, David C.; Formosa, Daniel J.; Hawthorne, Allen D.; Noyes deceased, Eliot F.; by Holcombe, Peter C.; Roehrs, Kurt; and Siegel, Paul F., to Discovision Associates. Keyboard housing. 258,957, 4-21-81, Cl. D14-45.000.

Bosch Siemens Hausgerate GmbH: *See*—
Hentschel, Harry, 258,926, Cl. D7-93.000.

Braun Aktiengesellschaft: *See*—
Ullmann, Roland, 258,993, Cl. D28-49.000.

Brentini, Attilo. Key-ring. 258,921, 4-21-81, Cl. D3-61.000.

Bright, Stephen K.; and Van Valkinburgh, Robert H., to Xerox Corporation. Electrophotographic apparatus. 258,964, 4-21-81, Cl. D16-30.000.

Bruce, Gordon P.: *See*—
Bevilacqua, Ernest M.; Bruce, Gordon P.; Danielson, David C.; Formosa, Daniel J.; Hawthorne, Allen D.; Noyes deceased, Eliot F.; Holcombe, Peter C.; Roehrs, Kurt; and Siegel, Paul F., 258,957, Cl. D14-45.000.

Buchsteiner nee Fetzer, Renate, to Johannes Buchsteiner GmbH & Co KG. Collapsible rack. 258,928, 4-21-81, Cl. D7-188.000.

Burroughs Corporation: *See*—
Clayton, Richard G.; Sims, Jerry J.; Crump, Thomas W.; and Carell, Richard E., 258,959, Cl. D14-50.000.

Byrum, Peter. Table for examination and therapeutic use. 258,986, 4-21-81, Cl. D24-3.000.

Cajon Co.: *See*—
Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,983, Cl. D23-43.000.

Carell, Richard E.: *See*—
Clayton, Richard G.; Sims, Jerry J.; Crump, Thomas W.; and Carell, Richard E., 258,959, Cl. D14-50.000.

Carr, Harold F., Jr.; and Humphries, David F. Cover for wrecker booms. 258,947, 4-21-81, Cl. D12-14.000.

Chadima, George E., Jr., to Norand Corporation. Portable data entry terminal. 258,956, 4-21-81, Cl. D14-42.000.

Clarke-Gravely Corporation: *See*—
Phillips, Paul E., 258,963, Cl. D15-49.000.

Clayton, Richard G.; Sims, Jerry J.; Crump, Thomas W.; and Carell, Richard E., to Burroughs Corporation. Printer. 258,959, 4-21-81, Cl. D14-50.000.

Collins, Samuel T. Seat. 258,923, 4-21-81, Cl. D6-71.000.

Corrigan, John J., to Morehouse Industries, Inc. Sandmill. 258,960, 4-21-81, Cl. D15-123.000.

Crest Industries Corp.: *See*—
Adler, Herbert, 258,968, Cl. D19-76.000.
Adler, Herbert, 258,969, Cl. D19-76.000.

Crump, Thomas W.: *See*—
Clayton, Richard G.; Sims, Jerry J.; Crump, Thomas W.; and Carell, Richard E., 258,959, Cl. D14-50.000.

D'Aguanno, Steven R.: *See*—
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Santaw, Peter M.; and D'Aguanno, Steven R., 258,971, Cl. D21-122.000.

Dallaire, Raymond. Window component extrusion. 258,991, 4-21-81, Cl. D25-74.000.

Dallaire, Raymond. Window component extrusion. 258,992, 4-21-81, Cl. D25-74.000.

Danielson, David C.: *See*—
Bevilacqua, Ernest M.; Bruce, Gordon P.; Danielson, David C.; Formosa, Daniel J.; Hawthorne, Allen D.; Noyes deceased, Eliot F.; Holcombe, Peter C.; Roehrs, Kurt; and Siegel, Paul F., 258,957, Cl. D14-45.000.

Decker, George: *See—*
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Santaw, Peter M.; and D'Aguanno, Steven R., 258,971, Cl. D21-122.000.

Del Grosso, Elaine V. Butterfly bow package decoration. 258,946, 4-21-81, Cl. D11-184.000.

Deschamps, Robert L.; and Schory, Kenneth C. Chair or similar article. 258,924, 4-21-81, Cl. D6-73.000.

Discovision Associates: *See—*
Bevilacqua, Ernest M.; Bruce, Gordon P.; Danielson, David C.; Formosa, Daniel J.; Hawthorne, Allen D.; Noyes deceased, Eliot F.; Holcombe, Peter C.; Roehrs, Kurt; and Siegel, Paul F., 258,957, Cl. D14-45.000.

Doi, Tetsuyuki: *See—*
Sakamoto, Masakazu; and Doi, Tetsuyuki, 258,977, Cl. D22-23.000.

Electronic Security Systems, Inc.: *See—*
Ng, William W., 258,943, Cl. D10-106.000.

Ethyl Corporation: *See—*
Hayes, Thomas H., 258,936, Cl. D9-383.000.

Fathauer, George H.; and Henry, Gregory P., to Medtronic, Inc. Medical electrical equipment case. 258,987, 4-21-81, Cl. D24-8.000.

Formosa, Daniel J.: *See—*
Bevilacqua, Ernest M.; Bruce, Gordon P.; Danielson, David C.; Formosa, Daniel J.; Hawthorne, Allen D.; Noyes deceased, Eliot F.; Holcombe, Peter C.; Roehrs, Kurt; and Siegel, Paul F., 258,957, Cl. D14-45.000.

Frick, Berndt E. Sound insulating cover for a typewriter, teletype or the like. 258,965, 4-21-81, Cl. D18-1.000.

Fukushima, Hisao; Kanda, Yoshinori; Ito, Michio; and Koiwa, Norimi, to Oki Electric Industry Co., Ltd. Telephone set. 258,958, 4-21-81, Cl. D14-53.000.

Gabriella, Rocco M. Sculpture. 258,945, 4-21-81, Cl. D11-161.000.

Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, to Cajon Co. Elbow fitting. 258,983, 4-21-81, Cl. D23-43.000.

Genaro, Donald M.: *See—*
Saporito, Dominic A.; and Genaro, Donald M., 258,981, Cl. D23-25.000.
Saporito, Dominic A.; and Genaro, Donald M., 258,982, Cl. D23-26.000.

Graham, Walter B. Graphic arts blade. 258,932, 4-21-81, Cl. D8-98.000.

Grane, Christian. Breathing mask. 258,994, 4-21-81, Cl. D29-8.000.

Grodin, Adam J., to American Cyanamid Company. Box. 258,939, 4-21-81, Cl. D9-424.000.

Hari, Matsuda, to Pentagon Industries, Inc. Magnetic cassette duplicator. 258,955, 4-21-81, Cl. D14-6.000.

Hasbro Industries, Inc.: *See—*
Orenstein, Henry; Decker, George; Schlau, Floyd E.; Santaw, Peter M.; and D'Aguanno, Steven R., 258,971, Cl. D21-122.000.
Samuels, Donald H., 258,972, Cl. D21-134.000.
Samuels, Donald H., 258,973, Cl. D21-133.000.
Samuels, Donald H., 258,974, Cl. D21-139.000.

Hawkins, Richard N. Reversible scissors. 258,931, 4-21-81, Cl. D8-57.000.

Hawthorne, Allen D.: *See—*
Bevilacqua, Ernest M.; Bruce, Gordon P.; Danielson, David C.; Formosa, Daniel J.; Hawthorne, Allen D.; Noyes deceased, Eliot F.; Holcombe, Peter C.; Roehrs, Kurt; and Siegel, Paul F., 258,957, Cl. D14-45.000.

Hayashi, Masakazu, to Kabushiki Kaisha Hayashi Racing. Wheel for automobiles. 258,951, 4-21-81, Cl. D12-211.000.

Hayes, Thomas H., to Ethyl Corporation. Bottle or similar article. 258,936, 4-21-81, Cl. D9-383.000.

Henkels, Walter. Combined thermometer and holder for a calender, note paper and writing instruments. 258,941, 4-21-81, Cl. D10-53.000.

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Hentschel, Harry, to Bosch Siemens Hausgerate GmbH. Toaster. 258,926, 4-21-81, Cl. D7-93.000.

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Irvine, William F. Exercise bench. 258,975, 4-21-81, Cl. D21-191.000.

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Stump, Ray H., Jr. Pallet. 258,948, 4-21-81, Cl. D12-53.000.
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Takayama, James E. Fan for automatic generator. 258,952, 4-21-81, Cl. D13-1.000.
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Thomas, Philip A.: *See*—
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Peirce, Elwin E.; and Waltz, Arthur L., 258,985, Cl. D23-163.000.
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Gallagher, Bernard J.; Wennerstrom, Erling G.; Houdek, Mark R.; and Aliczky, Laszlo, 258,983, Cl. D23-43.000.
White, Carl A. Boot buckling aid. 258,920, 4-21-81, Cl. D2-378.200.
White, Howard. Travel trailer. 258,949, 4-21-81, Cl. D12-103.000.
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Williams, William O., Jr. Top water artificial fishing lure. 258,978, 4-21-81, Cl. D22-27.000.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 21, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

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238 4,263,077
244.11 4,263,078
4,263,079
4,263,080
279 4,263,081
309.3 4,263,082
414 4,263,083
503 4,263,084
542 4,263,085
4,263,086
613 4,263,087
626 4,263,088
627 4,263,089

CLASS 157

1.24 4,262,727

CLASS 159

16 R 4,263,090
44 4,263,091

CLASS 160

168 R 4,262,728
242 4,262,729

CLASS 162

48 4,263,092
109 4,263,093
164 R 4,263,094

CLASS 164

4 4,262,730
19 4,262,731
87 4,262,732
412 4,262,733
423 4,262,734

CLASS 165

4 4,262,735
11 R 4,262,736
12 4,262,737
25 4,262,738
67 4,262,740
68 4,262,741
485 4,262,739

CLASS 166

68 4,262,742
91 4,262,743
227 4,262,744
263 4,262,745
273 4,262,746
305 R 4,262,747
348 4,262,748

CLASS 169

62 4,262,749

CLASS 171

27 4,262,750

CLASS 172

271 4,262,751
574 4,262,752

CLASS 173

43 4,262,754
131 4,262,755
149 4,262,756

CLASS 174

34 4,263,471
51 4,263,472
70 S 4,263,473
84 C 4,263,474
138 E 4,263,475
156 4,263,476
158 F 4,263,477
169 4,263,478

CLASS 175

67 4,262,757
73 4,262,758
227 4,262,759
347 4,262,760
374 4,262,761
401 4,262,762

CLASS 176

1 4,263,095
3 4,263,096
5 4,263,097
10 4,263,098

CLASS 177

4 4,262,763

CLASS 178

46 4,263,479

CLASS 179

2 EC 4,263,480
6.14 4,263,481
6.3 R 4,263,482
111 E 4,263,484

CLASS 180

9.48 4,262,764
19 R 4,262,765
75 4,262,766
192 4,262,767
242 4,262,768
323 4,262,769

CLASS 181

258 4,262,770

CLASS 182

1 4,262,771
48 4,262,772
132 4,262,773
179 4,262,774

CLASS 184

6.4 4,262,775
15 R 4,262,776

CLASS 187

17 4,262,777

CLASS 188

1 C 4,262,778
315 4,262,779

CLASS 190

18 A 4,262,780

CLASS 192

0.09 4,262,783
4 B 4,262,781
8 R 4,262,782
35 4,262,785
46 4,262,786
52 4,262,784
84 T 4,262,787
107 M 4,262,788
113 B 4,262,789

CLASS 196

14.5 4,262,790
132 4,262,791

CLASS 198

348 4,262,792
424 4,262,793
459 4,262,794
479 4,262,795
687 4,262,796
756 4,262,797

CLASS 200

5 A 4,263,485
17 R 4,263,486
48 KB 4,263,487
52 R 4,263,488
81 R 4,263,489
144 AP 4,263,490
146 R 4,263,491
288 4,263,492

CLASS 201

39 4,263,099
41 4,263,100

CLASS 202

248 4,263,101

CLASS 203

22 4,263,102
88 4,263,103

CLASS 204

1 T 4,263,104
2 4,263,105
43 S 4,263,106
99 4,263,107
109 4,263,108
119 4,263,109
128 4,263,110
129 4,263,111
4,263,112
146 4,263,113
149 4,263,114
195 P 4,263,115
224 M 4,263,116
230 4,263,117
242 4,263,118
257 4,263,119
273 4,263,120
296 4,263,121
300 EC 4,263,122

CLASS 206

315 R 4,262,798
363 4,262,799
364 4,262,800
522 4,262,801
540 4,262,802
554 4,262,803
561 4,262,804

CLASS 208

8 LE 4,263,123
8 R 4,263,124
4,263,125
14 4,263,126
58 4,263,127
91 4,263,128
111 4,263,129
113 4,263,130
114 4,263,131
134 4,263,132
4,263,133
139 4,263,134

CLASS 209

577 4,262,806
592 4,262,807
656 4,262,805

CLASS 210

163 4,263,138
169 4,263,139
247 4,263,140
608 4,263,142
612 4,263,135
629 4,263,143
658 4,263,144
675 4,263,145
679 4,263,146
685 4,263,147
705 4,263,148
759 4,263,136
800 4,263,137

CLASS 211

46 4,262,808
192 4,262,809
206 4,262,810

CLASS 212

87 4,262,811
243 4,262,812

CLASS 215

12 R 4,262,813
232 4,262,814

CLASS 219

69 G 4,263,494
69 W 4,263,493
121 ED 4,263,496
121 LD 4,263,495
138 4,263,497
312 4,263,498
331 4,263,499
377 4,263,500
497 4,263,501
521 4,263,502

CLASS 220

273 4,262,815

CLASS 221

46 4,262,816
130 4,262,817
296 4,262,818

CLASS 222

92 4,262,819
146 H 4,262,820
162 4,262,821
174 4,262,822
321 4,262,823
450 4,262,824
503 4,262,825
567 4,262,826
607 4,262,827

CLASS 223

115 4,262,828

CLASS 224

32 R 4,262,829
42.06 4,262,830
42.45 R 4,262,831
206 4,262,832
239 4,262,833
324 4,262,834

CLASS 225

25 4,262,835

CLASS 227

110 4,262,836

CLASS 229

23 R 4,262,837
72 4,262,838

CLASS 232

35 4,262,839

CLASS 233

1 R 4,262,840
29 4,262,841

CLASS 235

92 T 4,262,842
454 4,263,504
487 4,263,503

CLASS 236

15 C 4,262,843
48 R 4,262,844

CLASS 238

7 4,262,845

CLASS 239

1 4,262,846
112 4,262,847
4,262,848
175 4,262,849

CLASS 241

16 4,262,851
17 4,262,850

CLASS 242

7.03 4,262,852
7.05 B 4,262,853
54 R 4,262,854
58.1 4,262,855
71.8 4,262,856
84.1 A 4,262,857
107.4 A 4,262,858
192 4,262,859
4,262,860

CLASS 244

3.2 4,262,861
3.29 4,262,862
13 4,262,863
31 4,262,864
151 A 4,262,865
153 R 4,262,866
168 4,262,867
214 4,262,868

CLASS 248

74 R 4,262,869
188.3 4,262,870
188.7 4,262,871
311.3 4,262,872
318 4,262,873
467 4,262,874

CLASS 249

114 R 4,262,875

CLASS 250

231 SE 4,263,506
255 4,263,509
272 4,263,510
281 4,263,507
343 4,263,511
358 R 4,263,508
373 4,263,512
439 P 4,263,513
492 A 4,263,514
494 4,263,515

CLASS 251

9 4,262,876
141 4,262,877
175 4,262,878
230 4,262,879
288 4,262,880

CLASS 252

8.9 4,263,149
32.7 E 4,263,150
33 4,263,151
46.4 4,263,152
47.5 4,263,154
49.8 4,263,155
51.5 A 4,263,156
54.6 4,263,157
79 4,263,159
174.16 4,263,160
182 4,263,161
4,263,162
301.1 W 4,263,163
301.4 R 4,263,164
350 4,263,165
359 E 4,263,166
391 4,263,167
429 B 4,263,168
4,263,169
429 C 4,263,170
4,263,171
439 4,263,172
452 4,263,173
455 Z 4,263,174
473 4,263,175
475 4,263,153
543 4,263,176
547 4,263,177
4,263,178
548 4,263,179
573 4,263,158

CLASS 254

93 R 4,262,881

CLASS 256

22 4,262,882
25 4,262,883
42 4,262,884

CLASS 260

8 4,263,180
9 4,263,181
4,263,182
17 R 4,263,183
17.4 CL 4,263,184
17.4 R 4,263,185
23 H 4,263,186
29.2 N 4,263,187
29.2 TN 4,263,188
29.3 4,263,189
29.4 UA 4,263,190
29.6 E 4,263,192
29.6 RB 4,263,193
29.6 RW 4,263,194
29.6 S 4,263,191
29.6 XA Re.30,582
31.8 XA 4,263,195
33.6 UA 4,263,196
37 N 4,263,197
40 R 4,263,198
4,263,199
42.49 4,263,200
45.7 S 4,263,201
45.75 R 4,263,202
45.8 NZ 4,263,505
45.85 H 4,263,203
145 C 4,263,229
147 4,263,204
152 4,263,205
195 4,263,206
239.3 T 4,263,207
345.1 4,263,208
345.9 R 4,263,209
346.22 4,263,210
346.76 4,263,211
347.5 4,263,212
347.7 4,263,213
397.2 4,263,214
4,263,215
410.7 4,263,216
448 A 4,263,217
450 4,263,141
4,263,218
453 AL 4,263,220
453 AM 4,263,221
453 RW 4,263,219
463 4,263,222
465 F 4,263,223
465.8 D 4,263,224
932 4,263,230
968 4,263,231
989 4,263,232

CLASS 261

78 R 4,263,233
89 4,263,235
153 4,263,234

CLASS 264

26 4,263,236
71 4,263,240
121 4,263,241
132 4,263,242
137 4,263,243
168 4,263,244
184 4,263,245
219 4,263,237
230 4,263,246
273 4,263,247
328.2 4,263,248
334 4,263,249
338 4,263,250
503 4,263,251
514 4,263,252
515 4,263,238
518 4,263,239

CLASS 266

196 4,262,885

CLASS 267

8 R 4,262,886
9 A 4,262,887
4,262,888
140.5 4,262,889

CLASS 269

21 4,262,890
71 4,262,891
181 4,262,892

CLASS 270

31 4,262,893

CLASS 271

4 4,262,894
65 4,262,895
90 4,262,896
185 4,262,897

CLASS 272

68 4,262,898
73 4,262,899
113 4,262,900
117 4,262,901
132 4,262,902

CLASS 273

67 R 4,262,903
113 4,262,904
129 W 4,262,905
143 R 4,262,906
249 4,262,907
310 4,262,908
323 4,262,909
408 4,262,910
428 4,262,911

CLASS 277

1 4,262,913
84 4,262,914
188 R 4,262,915

CLASS 279

1 S 4,262,916
4 4,262,917

CLASS 280

11.26 4,262,918
16 4,262,919
81 R Re.30,581
408 4,262,920
411 C 4,262,921
414 R 4,262,922
423 B 4,262,923
603 4,262,924
604 4,262,925
605 4,262,926
609 4,262,927
645 4,262,928
713 4,262,929
718 4,262,930
729 4,262,931
802 4,262,932
4,262,933
804 4,262,934

CLASS 282

27.5 4,262,935
4,262,936
4,262,937
4,262,938

CLASS 283

65 4,262,939

CLASS 285

61 4,262,940
110 4,262,941
382.5 4,262,942
420 4,262,943

CLASS 289

2 4,262,944

CLASS 290

53 4,263,516

CLASS 292

89 4,262,945
307 R 4,262,946

CLASS 293

1 4,262,947

CLASS 294

1 BB 4,262,948
65.5 4,262,949
67 AA 4,262,950
89 4,262,951
116 4,262,952

CLASS 296

1 S 4,262,953

4,262,954
24 R 4,262,955
26 4,262,956
37.1 4,262,957
65 R 4,262,958
78.1 4,262,959
84 R 4,262,960
182 4,262,961

CLASS 297

194 4,262,962
473 4,262,963

CLASS 299

1 4,262,964
2 4,262,965
39 4,262,966

CLASS 301

37 R 4,262,967

CLASS 303

6 C 4,262,968
71 4,262,969

CLASS 305

11 4,262,970
14 4,262,971
35 R 4,262,972
54 4,262,973

CLASS 307

82 4,263,517
297 4,263,519
303 4,263,518
350 4,263,520
353 4,263,521
358 4,263,522
419 4,263,523

CLASS 308

6 R 4,262,974
9 4,262,975
4,262,976
26 4,262,977
36.1 4,262,978
217 4,262,979

CLASS 310

112 4,263,524
155 4,263,525
172 Re.30,585
263 4,263,526
316 4,263,527

CLASS 313

293 4,263,528
422 4,263,529
487 4,263,530

CLASS 315

3 4,263,531
3.5 4,263,532
111.9 4,263,533
169.4 4,263,534

CLASS 318

87 4,263,535
266 4,263,536
341 4,263,557
561 4,263,537
568 4,263,538
664 4,263,539
775 4,263,540
802 4,263,541
803 4,263,542

CLASS 322

8 4,263,543

CLASS 323

313 4,263,544
314 Re.30,586

CLASS 324

57 PS 4,263,545
61 R 4,263,546
72.5 4,263,547
102 4,263,548
127 4,263,549
133 4,263,550
233 4,263,551
326 4,263,552
327 4,263,553

CLASS 328

134 4,263,554
165 4,263,555
207 4,263,556

CLASS 330

10 4,263,558
53 4,263,559
129 4,263,560
149 4,263,561
257 Re.30,587
4,263,562
265 4,263,563
293 4,263,564

CLASS 331

15 4,263,565
82 4,263,566
111 4,263,567

CLASS 333

127 4,263,568
151 4,263,569
157 4,263,570
194 4,263,571

CLASS 335

26 4,263,572

CLASS 337

140 4,263,573
161 4,263,574
241 4,263,575

CLASS 338

35 4,263,576
242 4,263,577

CLASS 339

1 L 4,262,980
17 C 4,262,981
60 R 4,262,982
97 C 4,262,983
97 R 4,262,984
99 R 4,262,985
252 R 4,262,986
258 R 4,262,987

CLASS 340

52 R 4,263,578
58 4,263,579
163 4,263,580
168 B 4,263,581
365 S 4,263,582
501 4,263,583
566 4,263,584
567 4,263,585
568 4,263,586
620 4,263,587
632 4,263,588
638 4,263,589
672 4,263,590
695 4,263,591
707 4,263,592
728 4,263,593
795 4,263,594

CLASS 343

6.5 SS 4,263,595
106 R 4,263,596
121 4,263,597
700 MS 4,263,598
781 R 4,263,599
854 4,263,600

CLASS 346

1.1 4,263,601
140 R 4,263,602

CLASS 350

36 4,262,988
39 4,262,989
44 4,262,990
86 4,262,991
96.14 4,262,992
4,262,993
4,262,994
96.16 4,262,995
96.19 4,262,996

CLASS 354

23 D 4,262,997

CLASS 355

10 4,262,998
15 4,262,999
27 4,263,000
45 4,263,001

CLASS 356

349 4,263,002

CLASS 357

5 4,263,603
30 4,263,604
65 4,263,605
71 4,263,606
79 4,263,607

CLASS 358

11 4,263,608
14 4,263,609
20 4,263,610
23 4,263,611
31 4,263,612
55 4,263,613
69 4,263,614
148 4,263,615
166 4,263,616
186 4,263,617
188 4,263,618
196 4,263,619
213 4,263,620
4,263,621
242 4,263,622

CLASS 360

10 4,263,623
25 4,263,624
31 4,263,625
60 4,263,626
75 4,263,627
96.3 4,263,628
98 4,263,629
104 4,263,630
105 4,263,631
106 4,263,632
129 4,263,633
133 4,263,634

CLASS 361

45 4,263,637
71 4,263,635
230 4,263,636
328 4,263,638

CLASS 362

147 4,263,639
252 4,263,640
293 4,263,641

CLASS 363

17 4,263,642
19 4,263,643
26 4,263,644
49 4,263,645
58 4,263,646

CLASS 364

101 4,263,647
200 4,263,648
4,263,649
4,263,650
300 4,263,651
431 4,263,652
483 4,263,653
504 4,263,654
558 4,263,655
559 4,263,656
561 4,263,657
709 4,263,658
4,263,659
716 4,263,660

CLASS 365

15 4,263,661
36 4,263,662
182 4,263,663
185 4,263,664

CLASS 366

348 4,263,003

CLASS 367

94 4,263,665

CLASS 368

Re.30,588
187 4,263,666
300 4,263,667

CLASS 369

41 4,262,912
139 4,263,483

CLASS 370

24 4,263,668

CLASS 371

27 4,263,669

CLASS 375

9 4,263,670
15 4,263,671
111 4,263,672
117 4,263,673

CLASS 405

172 4,263,004
303 4,263,005

CLASS 411

15 4,262,577

CLASS 422

1 4,263,253
25 4,263,254
61 4,263,255
66 4,263,256
100 4,263,257
113 4,263,258
173 4,263,259
201 4,263,260

CLASS 423

121 4,263,261
167 4,263,262
212 4,263,263
239 4,263,264
321 S 4,263,265
329 4,263,266
393 4,263,267
449 4,263,268
488 4,263,269
573 G 4,263,271
573 R 4,263,270

CLASS 424

19 4,263,272
21 4,263,273
46 4,263,274
47 4,263,275
52 4,263,276
72 4,263,277
75 4,263,278
85 4,263,279
114 4,263,280
155 4,263,281
177 4,263,282
4,263,283
180 4,263,284
195 4,263,285
199 4,263,286
200 4,263,287
210 4,263,288
238 4,263,289
243 4,263,290
246 4,263,291
4,263,292
248.5 4,263,293
248.54 4,263,294
249 4,263,295
4,263,296
250 4,263,297
4,263,298
4,263,299
251 4,263,300
253 4,263,301
258 4,263,302
260 4,263,303
262 4,263,304
263 4,263,305
4,263,306
4,263,307
267 4,263,308
269 4,263,309
4,263,310
270 4,263,311
4,263,312
274 4,263,314
4,263,315
4,263,316
278 4,263,317
282 4,263,318
305 4,263,319
319 4,263,320
320 4,263,321
324 4,263,322
4,263,323
325 4,263,324
330 4,263,325
331 4,263,326

CLASS 425

78 4,263,006
371 4,263,007

CLASS 426

3 4,263,327
103 4,263,328
310 4,263,329
414 4,263,330
535 4,263,331
540 4,263,332
573 4,263,333
4,263,334

CLASS 427

29 4,263,335
45.1 4,263,336
54.1 4,263,337
55 4,263,338
64 4,263,339
84 4,263,340
97 4,263,341
123 4,263,342
125 4,263,343
150 4,263,344
163 4,263,345
196 4,263,346
282 4,263,347
286 4,263,348
352 4,263,349
4,263,350
355 4,263,351
379 4,263,352
423 4,263,353
444 4,263,354

CLASS 428

124 4,263,355
138 4,263,356
4,263,357
195 4,263,358
4,263,359
238 4,263,360
240 4,263,361
258 4,263,362
284 4,263,363
287 4,263,364
310 4,263,365
332 4,263,366
338 4,263,367
373 4,263,368
395 4,263,370
432 4,263,371
446 4,263,372
531 4,263,373
594 4,263,375
693 4,263,374

CLASS 429

42 4,263,376
50 4,263,377
105 4,263,378
162 4,263,380
179 4,263,379
193 4,263,381
213 4,263,382
217 4,263,383

CLASS 430

25 4,263,384
4,263,385
4,263,386
49 4,263,387
59 4,263,388
106 4,263,389
125 4,263,390
4,263,391
169 4,263,392
218 4,263,393
287 4,263,394
332 4,263,395
409 4,263,396
542 4,263,397

CLASS 434

161 4,262,432
170 4,262,431

CLASS 435

34 4,263,398
104 4,263,399
137 4,263,402
172 4,263,403
177 4,263,400
253 4,263,404
291 4,263,405
4,263,406

CLASS 440

1 4,262,622

CLASS 455

175 4,263,674
192 4,263,675
285 4,263,676

CLASS 493

25 4,262,582
188 4,262,581
444 4,262,583

CLASS 521

33 4,263,407
51 4,263,408
81 4,263,409
106 4,263,410
108 4,263,411
114 4,263,412

CLASS 525

34 4,263,413
102 4,263,414
106 4,263,401
148 4,263,415
4,263,416
169 4,263,417
277 4,263,418
305 4,263,419
309 4,263,420
531 Re.30,583

CLASS 526

62 4,263,421
97 4,263,422

CLASS 528

55 4,263,423
85 4,263,424
309 4,263,425
486 4,263,426

CLASS 536

1 4,263,427
17 A 4,263,428
17 R 4,263,429

CLASS 542

458 4,263,430
459 4,263,431

CLASS 544

21 4,263,432
58.2 4,263,433
198 4,263,434
223 4,263,435

CLASS 546

14 4,263,436
89 4,263,437
216 4,263,438
251 4,263,439

CLASS 548

165 4,263,440
220 4,263,441

CLASS 549

14 4,263,442
83 4,263,443

CLASS 560

26 4,263,444
62 4,263,445
75 4,263,446
231 4,263,447
246 4,263,448
263 4,263,449

CLASS 562

481 4,263,451
487 4,263,452
543 4,263,453
554 4,263,450
587 4,263,454

CLASS 564

256 4,263,227
305 4,263,455
315 4,263,456
422 4,263,225
459 4,263,226
491 4,263,228

CLASS 568

316 4,263,457
323 4,263,458
448 4,263,459
457 4,263,460
636 4,263,461
652 4,263,462
873 4,263,463

CLASS 570

109 4,263,464

CLASS 585

18 4,263,465
421 4,263,466
525 4,263,467

CLASSIFICATION OF DESIGNS

D2—	378.2	258,920			258,933		184	258,946		53	258,958		122	258,971		43	258,983
D3—	61	258,921		353	258,934	D12—	14	258,947	D15—	7	258,961		133	258,973		49	258,984
D4—	35	258,922	D9—	311	258,938		53	258,948		48	258,962		134	258,972		163	258,985
D6—	71	258,923		374	258,935		103	258,949		49	258,963		139	258,974	D24—	3	258,986
	73	258,924		376	258,937		157	258,950		123	258,960		191	258,975		8	258,987
D7—	13	258,925		383	258,936		211	258,951	D16—	30	258,964	D22—	23	258,976		10	258,988
	93	258,926		424	258,939	D13—	1	258,952	D18—	1	258,965			258,977			258,989
	107	258,927	D10—	46	258,940			258,953		7	258,966		27	258,978	D25—	2	258,990
	188	258,928		53	258,941		12	258,954	D19—	36	258,967		30	258,979		74	258,991
D8—	14	258,929		73	258,942	D14—	6	258,955		76	258,968		31	258,980			258,992
	22	258,930		106	258,943		42	258,956			258,969	D23—	25	258,981	D28—	49	258,993
	57	258,931	D11—	157	258,944		45	258,957					26	258,982	D29—	8	258,994
	98	258,932		161	258,945		50	258,959	D21—	17	258,970						

CLASSIFICATION OF PLANTS

P.—	7	4,693		20	4,694			4,695		74	4,696			4,697		88	4,698

GEOGRAPHICAL INDEX
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,263,444		4,262,670		4,263,522		4,263,447		4,262,633		4,263,665
6 :	4,262,697		4,262,677		4,263,528		4,263,500		4,262,668		4,263,676
	4,263,097		4,262,689		4,263,533		4,263,503		4,262,696	18 :	Re.30,585
	4,263,374		4,262,693		4,263,539		4,263,547		4,262,704		4,262,507
	4,263,645		4,262,698		4,263,554		4,263,638		4,262,739		4,262,514
	4,263,661		4,262,742		4,263,559	10 :	4,263,196		4,262,769		4,262,536
8 :	4,262,629		4,262,750		4,263,563		4,263,226		4,262,781		4,262,553
01 :	4,262,572		4,262,758		4,263,568		4,263,238		4,262,786		4,262,575
	4,262,602		4,262,780		4,263,579		4,263,360		4,262,803		4,262,580
	4,262,604		4,262,795		4,263,585	12 :	4,262,368		4,262,804		4,262,581
	4,263,487		4,262,798		4,263,600		4,262,414		4,262,809		4,262,584
	4,263,670		4,262,832		4,263,624		4,262,436		4,262,814		4,262,601
02 :	4,262,410		4,262,859		4,263,627		4,262,483		4,262,817		4,262,603
04 :	4,262,549		4,262,860		4,263,629		4,262,534		4,262,821		4,262,606
	4,262,662		4,262,873		4,263,642		4,262,560		4,262,824		4,262,827
	4,262,663		4,262,876		4,263,644		4,262,649		4,262,844		4,262,839
	4,262,665		4,262,917		4,263,664		4,262,701		4,262,848		4,262,875
	4,262,846		4,262,918		4,263,673		4,262,744		4,262,854		4,262,943
	4,262,882		4,262,944	08 :	4,262,406		4,262,767		4,262,905		4,263,029
	4,262,922		4,262,981		4,262,561		4,262,857		4,262,909		4,263,073
	4,262,978		4,262,985		4,262,605		4,262,891		4,262,912		4,263,201
	4,263,010		4,262,995		4,262,651		4,262,948		4,262,914		4,263,320
	4,263,089		4,262,996		4,262,655		4,263,001		4,262,947		4,263,341
	4,263,336		4,263,027		4,262,685		4,263,036		4,262,955		4,263,409
	4,263,572		4,263,038		4,262,694		4,263,278		4,262,957		4,263,610
	4,263,598		4,263,053		4,262,711		4,263,474		4,262,969	19 :	4,262,751
	4,263,650		4,263,064		4,262,801		4,263,511		4,262,970		4,262,754
	4,263,660		4,263,065		4,262,815		4,263,621		4,262,971		4,263,055
	4,263,663		4,263,066		4,262,829		4,263,637		4,263,077		4,263,489
05 :	4,262,431		4,263,069		4,262,965		4,263,671		4,263,079	20 :	4,262,812
06 :	Re.30,584		4,263,070		4,263,148	13 :	4,262,390		4,263,125		4,262,838
	4,262,373		4,263,071		4,263,263		4,262,494		4,263,127		4,262,878
	4,262,379		4,263,088	09 :	4,262,434		4,262,539		4,263,171	21 :	4,262,450
	4,262,381		4,263,096		4,262,530		4,262,626		4,263,174		4,262,773
	4,262,385		4,263,114		4,262,724		4,262,669		4,263,189		4,263,160
	4,262,418		4,263,124		4,262,737		4,262,807		4,263,192		4,263,646
	4,262,419		4,263,142		4,262,753		4,263,597		4,263,247	22 :	4,262,666
	4,262,424		4,263,144		4,262,877	16 :	4,262,811		4,263,254		4,262,819
	4,262,449		4,263,152		4,262,904		4,262,911		4,263,338		4,263,020
	4,262,452		4,263,155		4,262,946		4,262,924		4,263,376		4,263,025
	4,262,477		4,263,188		4,263,110	17 :	4,262,375		4,263,392		4,263,121
	4,262,490		4,263,269		4,263,111		4,262,398		4,263,398		4,263,156
	4,262,501		4,263,289		4,263,112		4,262,408		4,263,415	23 :	4,263,243
	4,262,510		4,263,318		4,263,137		4,262,443		4,263,416		4,263,583
	4,262,578		4,263,347		4,263,221		4,262,448		4,263,429	24 :	4,262,470
	4,262,579		4,263,379		4,263,262		4,262,456		4,263,485		4,262,474
	4,262,591		4,263,410		4,263,297		4,262,518		4,263,549		4,262,541
	4,262,595		4,263,428		4,263,312		4,262,533		4,263,550		4,262,597
	4,262,619		4,263,481		4,263,357		4,262,550		4,263,553		4,262,757
	4,262,623		4,263,499		4,263,367		4,262,556		4,263,582		4,262,901
	4,262,631		4,263,506		4,263,402		4,262,567		4,263,587		4,262,992
	4,262,635		4,263,514		4,263,438		4,262,586		4,263,615		4,263,081
	4,262,654		4,263,516		4,263,446		4,262,589		4,263,616		4,263,151

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DESIGN PATENTS

01	258,962		258,967		258,948		258,971		258,969	44	258,972
04	258,987		258,986	25	258,942		258,981	38	258,920		258,973
05	258,980	09	258,957	26	258,953		258,982	39	258,935		258,974
06	258,940	12	258,934		258,959	36	258,922		258,983	45	258,978
	258,943	13	258,966		258,963		258,929	40	258,970	47	258,947
	258,944	17	258,924	27	258,949		258,937		258,989	48	258,990
	258,952		258,955	31	258,932		258,939	41	258,985	51	258,923
	258,960	19	258,956	32	258,927		258,964	42	258,946	53	258,938
	258,961	22	258,936	34	258,945		258,968				

PLANT PATENTS

06	4,695	4,696	4,697	17	4,698	24	4,693

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